

SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

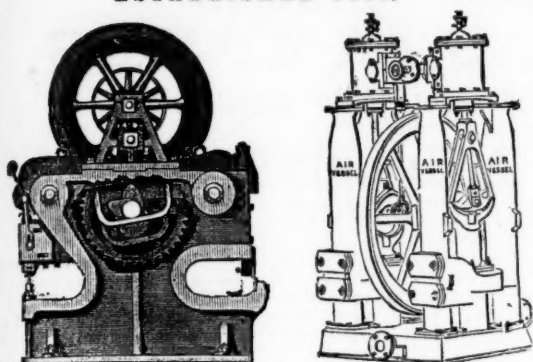
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No. 2221.—VOL. XLVIII.

LONDON, SATURDAY, MARCH 16, 1878.

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A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.
SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where
THE MCKEAN ROCK DRILLS
Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24-90, 27-60, 24-80, 26-10,
28-30, 27-10, 28-40, 28-70 metres. Total advance of south head-
ing during January was 121-30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

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most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

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reference to our full illustrated catalogue, will be sent.

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TUNNELS, SINKING
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sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 80 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines
Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Eggar-
mwyn, and Katumben Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argenteiferous Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chads and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nanthead waste heaps amounted last year to £600, besides the ma-
chinery being occupied for some months in dressing ore-stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

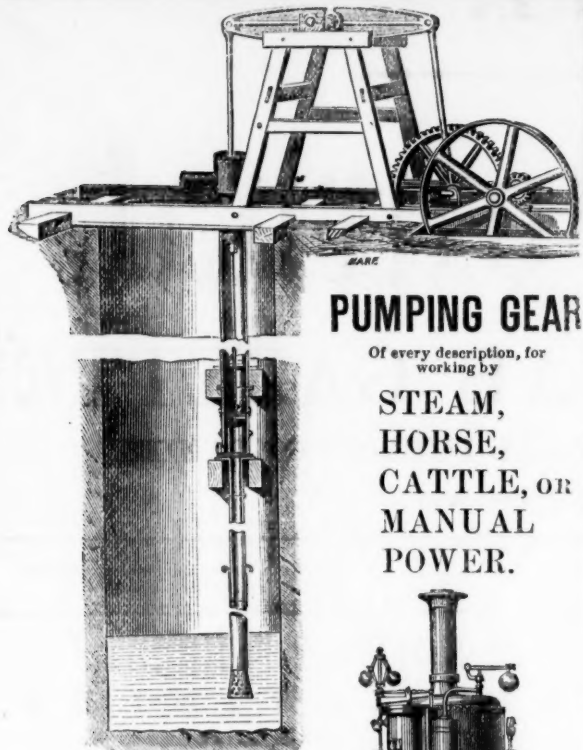
Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a great much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWTH, SOUTH WALES.



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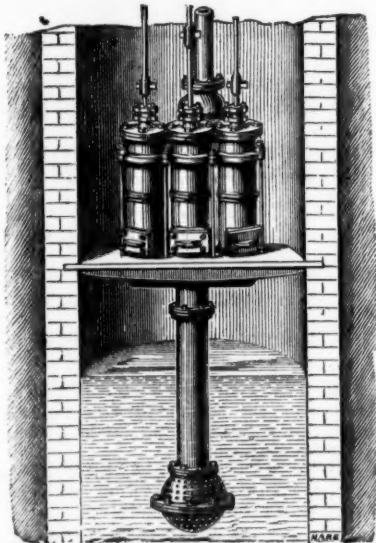
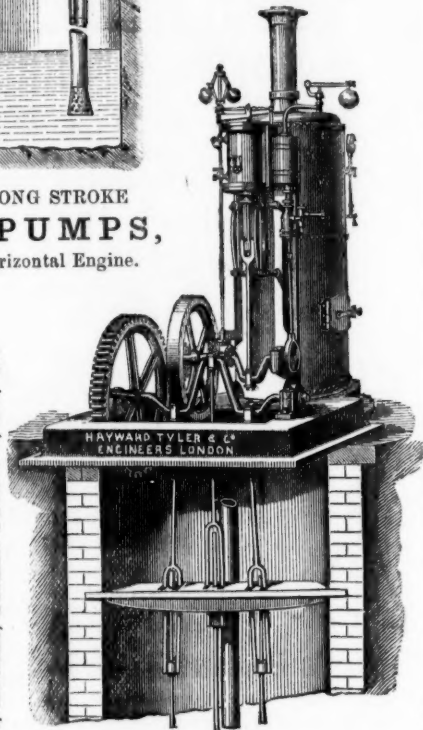
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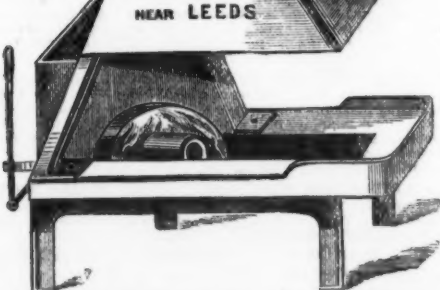
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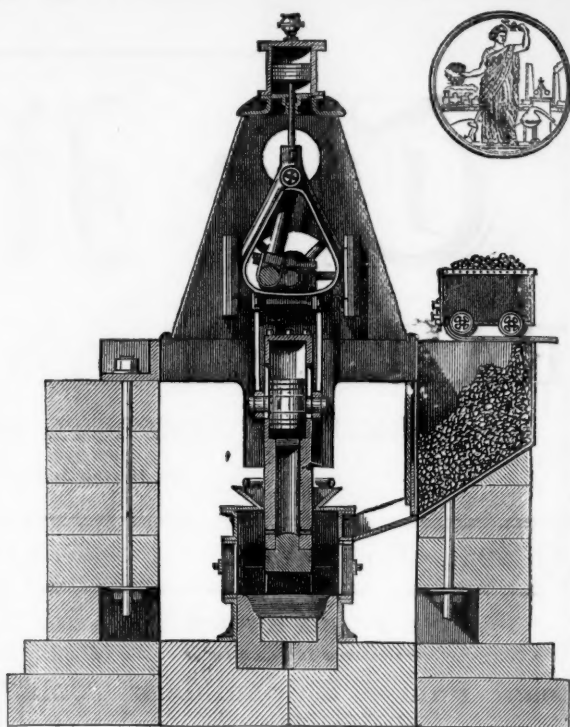
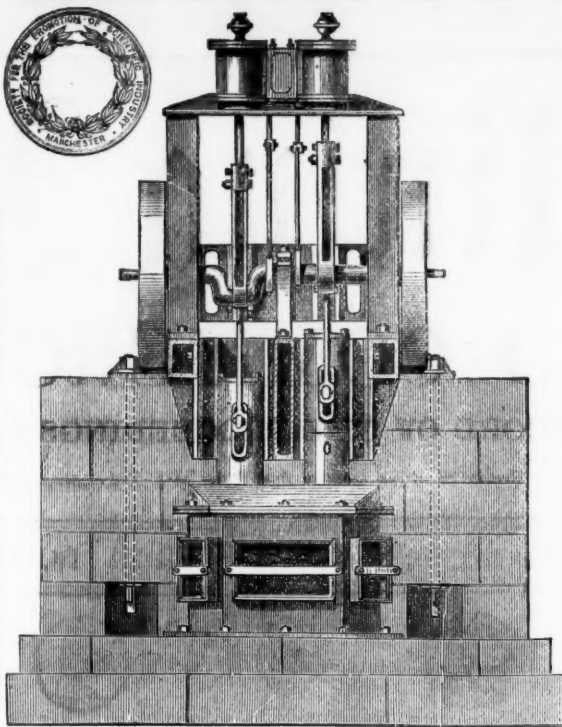
GILDERSOME FOUNDRY,

NEAR LEEDS



GREAT SAVING IN ROOM.

THE NEWCASTLE DAILY CHRON. CL
(ESTABLISHED 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North Shields; 105 High-street, Sunderland.



SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

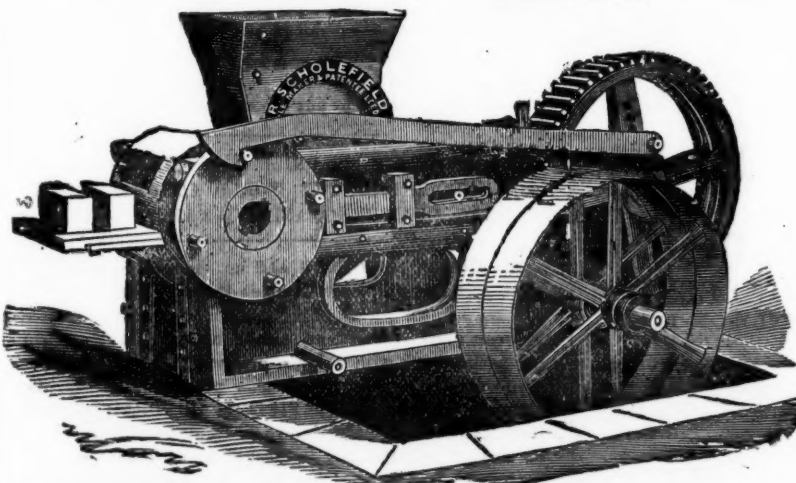
The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, **SOLE MAKERS OF STEPHENS' PATENT PULVERISER.**
MINING AND OTHER MACHINERY CONSTANTLY ON SALE,
NEW AND SECOND-HAND.

R. SCHOLEFIELD'S LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of

production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0

Total cost of making 10,000 pressed bricks ... £1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.
SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS.
KIRKSTAL ROAD, LEEDS.

British and Foreign Safety Fuse Company,
REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,
FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION.



Original Correspondence.

THE MINERS' CONFERENCE AT BIRMINGHAM.

After a sitting of four days the Conference of representative miners, held at Birmingham, was brought to a close on Saturday without, so far as we can gather, from arriving at any definite conclusion by which the present stagnation in the coal trade can be removed and profits and wages improved. We were led to understand that the chief object of the gathering was to point out how the evils of over-production could be overcome to the benefit of the colliery owner and the working miner, and how the Mines Inspection Act was to be amended in the interest of all persons interested in mining property. Those points were certainly discussed to a limited extent, but without any practical decision being come to. In his opening address the President, Mr. MACDONALD, M.P., denounced some parts of the Mines Inspection Act, complaining that inspectors, owners, and managers shifted their responsibility on to the workmen, and suggested that it would be the duty of the men throughout the kingdom to prepare a memorial for presentation to the Home Secretary with the view of doing away with inspection as it was now carried out, by discharging the inspectors, or to have it thorough and complete. At the time of the passing of the Act of 1872 Mr. MACDONALD and those who acted with him were quite jubilant on their success, whilst the colliery owners felt that more was required of them than in strict justice should have been imposed upon a body that more than any other had been too frequently exceptionally legislated for. By the last mines Act the cost of working an ordinary seam of coal was greatly increased, in most instances to the extent of from 1s. to 1s. 6d. per ton, whilst owing to some of the clauses many pits in which the seams were thin were obliged to be altogether abandoned, as they could not be made to pay. The extra cost of raising the coal, of course, led to an increase in the price of it without pecuniarily benefiting either employers or workmen. This was the result of the action taken by the representatives of the miners for the purpose of ensuring greater safety to all persons engaged in colliery operations. And now we are told that the existing legislation is not sufficient, and that the Bill of 1872 must be amended. If this is done to the extent that some persons consider necessary then in all probability there will be a still further increase in the cost of working our collieries, which cannot fail to interfere with the wages of the workmen as well as with the profits of owners. With regard to inspectors, it is thought that the number should be considerably increased, so that they could actually inspect all the mines in their districts. To do this the present number of 24 would have to be more than quadrupled, and even then no mine could be inspected more than two or three times in a year at the most. But were this to be done not only would working operations be interfered with, but the onus of management would devolve in a great measure upon the inspectors, and so relieve the managers from a great deal of responsibility of a serious nature, so that in the case of an accident it would be questionable who was to blame, the person who examined the mine once in four or five months, and who gave directions as to the ventilation, working, &c., or the manager who would say that he carried out the instructions given by the inspector. The present system, by which the manager is responsible for the carrying out of the Act of Parliament and the general and other rules, and who on being proved guilty of any act which in the opinion of the Court that tried the case was calculated to endanger the safety of the persons employed in a colliery can be sent to prison for three months, we consider is by far the best, seeing that it does away with anything in the shape of divided responsibility.

With respect to the present depression in the coal trade, which had led to a reduction in miners' wages, Mr. MACDONALD said there was only one cure, and that was to limit production to meet the wants of the country, and for that purpose he strongly advocated emigration. He did not understand why young men would work in a miserable coal mine for 16s. or 18s. a week, when there was work for them on railways and in other places at higher wages. Now it is this very thing of leaving one description of low-paid work for another in which higher wages were paid, that more than anything else has brought the coal miner down to his present state. During the years 1872 and 1873, when the miners were revelling in luxury owing to the very high wages, and did not care to work more than four days a week in consequence, many thousands of labourers were induced to go into collieries and remain in them up to the present time. Had it not been for the rush of ordinarily paid labourers to the mines the number of new collieries started since 1872 could not have been opened out, so that the power of production would now have been very much less than it is. This would have prevented the over production now complained of—at least to a marked extent. But now that so many collieries are opened out it is impossible to prevent them from being worked. But we are told that by limiting the output so as not to keep it in excess of the consumption that the price will be advanced, and profits and wages both go up. We certainly cannot see that this would be the case in the event of the men working less than they do now. At present, taking the whole of the kingdom, it will be found that the coal miners are not averaging more than four days a week, whilst coal is cheaper than it has been at any period during the last six or seven years. Here we have a limitation of production equal to 33 per cent., yet the price of coal is so low that employers are making no profits whatever. But to carry out the principle advocated by Mr. MACDONALD still further, and the men should only work three days a week would they be benefited by so doing? We should say decidedly not, but just the reverse. Every day that a colliery stands still there is a large expense going on without any return whatever, and this of course adds so much to the cost of getting every ton of coal when the miners are working without benefiting the latter. Now, unless there is a demand for the coal, so that the colliery-owner can obtain a paying price, he must seek for some means to lessen the cost of production, and it is quite probable that the miner instead of an advance would have to submit to still lower wages, besides losing a day's work by his own act. But to carry the question of limitation a little further, we should like to see how it would affect our foreign trade. At present our exports of coal are equal nearly to one-eighth of all that is raised in the kingdom, and that quantity is sold because we are able to meet the continental producers in their own markets by selling at prices that admits of no profit, but keeps the collieries going. Let the cost of coal be then increased, and there is an immediate and marked falling off in our exports, and a consequent enforced limitation. So it is also with respect to iron, in the production of which so many millions tons of coal are consumed. If you raise the price of coal you will raise that of iron as well, and cause the demand for it to fall off, so that you again cause a diminished consumption of coal. Such would be the result of any attempt on the part of the miners to limit the production of coal with the expectation that it would lead to an increase of their wages. We admit that the wages of colliers are now too low—but that is not the fault of their employers, for we know that when the wages of workmen are high so also are the profits of the employers. Of course, if large bodies of colliers are willing and able to emigrate so much the better for those that are left; but they appear to prefer stopping at home, for were they to go to America or some other countries, their presence would certainly not have the effect of raising the wages of the old hands. During the sitting of the conference the public was informed of an over-winding accident at the No. 3 Pit of the Blantyre Colliery, near Glasgow, by which six men were killed. It was resolved to send a deputation to wait upon the Home Secretary calling his attention to the numerous deaths arising from overwinding. As there are means for preventing such accidents by the adoption of attaching hooks, there certainly does not appear why they should not be used, seeing that they are most effectual, and at the same time inexpensive. It was also agreed that it was desirable to prevent men working in mines who were incapable of protecting themselves, and who were also dangerous to other men employed in the same mines. The Central Board was requested to make enquiries, and ascertain all facts relative to the entire question, and report thereon. By this means it would appear that the desire is to get

rid of many comparatively new hands, and who may not be members of the Union, for it cannot be supposed that members would be made the sufferers by an arbitrary act on the part of those they pay to look after their interests. The subject is certainly a particularly difficult one looked at from any point. Are all the men to undergo an examination as to their qualifications for working at coal getting; and if so, who are to be the examiners? This is a question which appears to be a very knotty one indeed, but we leave it to those who have more interest in the matter than we have. On Saturday the conference was brought to a close by a resolution expressing entire concurrence in and endorsement of the views enunciated by the President on the pernicious efforts arising from the over production of coal and iron, whether commercially or socially considered.

COLLIERY ACCIDENTS.

SIR,—Ten years ago, in a popular magazine, I gave a dozen notable examples of the fact that colliery explosions occur in twos. This plurality is to be accounted for by atmospheric disturbances. In known "fiery" mines the danger of explosion has always been regarded as greater than usual during a sudden fall of the barometer. It is no new theory that the solution of the difficulty of rapid changes in the condition of the air in coal mines is only to be reached by a careful observation of the law of circular storms, or cyclones; and it is strange in these days of the triumphs of science that no practical system of storm warnings in connection with mining has been introduced with the other various contrivances for minimising the dangers of a collier's life.

All the great catastrophes resulting from explosions in mines have occurred almost simultaneously with violent storms on sea and land. This significant fact should not only lead to investigation but to an official practice of meteorological observations at various points, so that the approach of a cyclone may be telegraphed to the mining districts as it is to our seaports. The two recent explosions occurred within four days of each other, and in the midst of storms and other atmospheric disturbances. What might be a comparatively harmless act of carelessness one day might be fatal the next. Special and extra precautions should be used in presence of sudden changes of atmospheric pressure and temperature. A storm-signal at each pit's mouth would be an agent of inestimable value in the influence it would exercise over underground inspection during periods of atmospheric disturbance; and it should be an added regulation to the colliery's rules where naked lights are used that Davy lamps are enforced and blasting suspended so long as the storm-signal is exhibited.

JOSEPH HATTON.

Garrick Club, March 13.

IMPROVEMENTS IN THE SAFETY LAMP.

SIR,—My attention has been called to a notice in the Journal of Oct. 27 on an "Improved Safety Lamp," now being manufactured by Mr. A. B. Boullenoit, of Issy-sur-Seine, near Paris. With all due respect to this gentleman, and whilst wishing him every success in carrying out improvements, I would respectfully ask does he not take the idea of feeding safety lamps by compressed air from a lamp I registered in the year 1858? of which the following is the specification:—"This invention has for its object improvements in miners' safety lamps. For these purposes to each of such lamps an air vessel is supplied in which air is condensed, a stop-cock or valve is also applied to regulate the passage of the air from the air vessel to the wick of the lamp. By these means, when by reason of the bad atmosphere of the mine the flame of a lamp decreases, it may be improved by allowing the condensed air in the air vessel to flow therefrom to the wick. . . . The form of the air vessel may be varied. . . . What I claim is the construction of an air vessel with a miner's lamp, as described." The air-tight dresses also suggested by Mr. A. B. Boullenoit as necessary to be used were made and successfully experimented on, I think, by Mr. T. Y. Hall, of Newcastle-on-Tyne, as far back as 1855; at all events, when I was there in 1858 he showed me the working plans of the apparatus. Whilst I rejoice to see that what I laboured for so many years ago is being so ably followed up, as also that of the Newcastle safety dress, too long neglected, I think, in fairness to myself and others, I am justified in putting these questions forward.

Knowing how ready you always are to accord justice to whom justice is due, I venture to ask you to insert this letter.

Adelaide, South Australia, Jan. 25.

SAMUEL HIGGS.

CAKEMORE COLLIERY COMPANY.

SIR,—I am desired by my directors to call attention to the quotations of the shares of this company in last week's Journal in the paragraph headed "Collieries." There is no ground for such a quotation, there having been no transfer of or dealing in the shares since the recent subscription at par for 1152 shares, the full amount of which (£7600) has since been paid up. As these unfounded quotations tend to injure the company, I hope that you will kindly refrain from publishing such without absolute proof of their being justified. I can tell the broker or jobber (as the case may be) who supplied them that if he is prepared to back his statement I can find him buyers for any number of shares at the prices quoted.

Finsbury Circus, March 14.

A. W. SNELLING, Secretary.

THE PARIS COAL SUPPLY.

SIR,—My letter in last week's Journal exhausts the London Coal Supply, and as to that of Paris I am prepared with the following comparative statements of cost of delivery per existing systems, and selling prices, &c., resulting in a very great saving—say, many shillings per ton—effected by the proposed system from Keadby and Goole, including railway and canal rates, and shipping charges, via the Seine, by means of light-draught lighters to Paris, especially adapted to the navigation of river, canalised river, and canal; Tyne, via Dunkerque and Calais, and rail to Paris, as given me by the managing director of the Paris Gas Company; Tyne, by same route to Paris, as given me by largest gas coal contractors—Sir Geo. Elliot, Bart., M.P., Ald. Hunter, and their Paris agent M. Audouy; Goole, via Calais and rail to Paris; Grimsby, via Dieppe and rail to Paris; Tyne, via Havre, Rouen, and Seine, to Paris; the late Mr. Seymour Clarke, general manager of the Great Northern Railway Company, report via Queenborough and Seine to Paris; the late Mr. Robt. Moseley, general manager of the Great Eastern Railway Company, report via Harwich and Seine to Paris; the chairman of the London, Chatham, and Dover Railway Company, personal enquiry on the spot in Paris as to the selling prices; the late Mr. Thomas Brassey, report to, by Mr. Trevithick, Mr. Brassey's special delegate to Paris, Rouen, &c.; Minister of Commerce, Paris, report; Chamber of Commerce, Paris, report; Paris Municipality; Paris Exhibition coal contract; Society of Arts; Standard; Belgian and French coalowners; Newcastle Coal Trade report; British and Belgian Government reports; an eminent shipbuilding firm; the largest coal and screw collier owners in Great Britain; Chambers of Commerce of Mons and Charleroi; Chamber of Commerce of the very largest coal shipping district in Great Britain; proposed system of transport. The largest, wealthiest, and oldest coal merchants in Paris, simultaneously large coalowners in Belgium, being thoroughly penetrated with the conviction that the proposed undertaking can deliver all categories and qualities of coal very much cheaper in Paris than indigenous Belgian or British coal, are prepared to guarantee all sales, thus affording the most ample security. Proof will be forthcoming that Yorkshire coal has currently realised a higher price in the Paris market than Newcastle, being, in fact, advertised at a higher rate than any other English coal. The memorandum of a meeting at the office of the chairman of the South Yorkshire Coal Association shows that English coal was selling currently in Paris at 48s. per ton, whilst identical category and quality can be delivered into customers' premises by proposed system at 26s. per ton. Such document is in the handwriting of the Secretary of the Imperial Mercantile Credit Association, Lombard-street, representing myself, then confined to bed with influenza. Reports of the Chambers of Commerce of Mons and Charleroi show the impossibility of Belgian and French coals competing in France with English, of a much superior

quality, and which vie with Belgian within a few leagues distance from the Belgian pits. The enormous quantity of small in the Belgian and French output renders the large coal much dearer at the pit's mouth than English coal delivered in Paris by proposed system. A French Government report shows that the entire supply of Paris with English coal resolves itself into a simple question of reduced cost of transport. The Journal of August 4, 1866, states: "With a reduced means of transport an increased consumption of 2,000,000 tons of coal will ensue;" and again, on Aug. 5, 1876: "With direct access to Paris by the Seine, reducing the cost of transit, it is practically impossible for Belgian coal to compete with English."

Clapham, March 13.

W. J. THOMPSON.

HYDRAULIC PIPE v. HEAVY CAST-IRON PUMPS FOR PROSPECTING.

SIR,—The severe cold freezing weather broke up on Jan. 13, and on the 14th it commenced storming, giving a full supply of water from the beginning for the miners to run night and day. The total rainfall for the season up to date is 38 in., 25 of which has fallen since Jan. 13, and the storm still continues. There is at the lowest calculation 25 ft. of snow on the mountains, insuring the miners a good run until the end of July, or later. Hydraulic pipe that is most commonly in use here is cut, rolled, and punched at the foundries, and from thence shipped to its destination, and there riveted into sections from 14 to 20 feet in length, according to order; its thickness varying from 1-14th to 1-18th in, in thickness according to the required pressure. Hydraulic pipe made of English T-iron, 1-14th in. in thickness, is calculated to stand a pressure of 400 ft. with safety. Although some companies have their pipe painted, while others have it dipped in hot tar, it seems to be a useless expenditure, for the rain and mountain streams here are so free from salt that after being laid on the ground for years it retains its brightness and is free from rust. I think when companies are simply prospecting pipe of this kind could be used instead of the heavy cast-iron pumps (such as are used in the tin and copper mines of Cornwall), the valve, working, and suction pieces being the only castings necessary; it would be much cheaper, and is easily erected.

Weaver Hill, Trinity Co., California, Feb. 16. CHAS. HARVEY.

PRIZE BLOWPIPE APPARATUS.

SIR,—Such of your readers as take any interest in that useful little branch of chemistry, "blowpipe work," will be glad to see that the prize of 10*l.* for the best guinea set of apparatus has been awarded at last. The names of the committee appointed to award the prize form a very imposing list, and the modest and much neglected little blowpipe must feel that better days are in store for it now that it has been "sat upon" by so weighty a party of gentlemen. It is understood that Dr. Foster has practically examined and compared all the competing sets, and as no better judge could have been chosen full confidence may be felt in the decision that the apparatus of Messrs. Letcher is really the best, and that anybody purchasing it will get a really good guinea's worth for his money. Many thanks are due to Col. Croll, the donor of the prize, for starting the competition. But it is very doubtful whether it was wise to fix the price as low as one guinea. It is perfectly impossible that anything like a complete outfit, even for very simple testing, can be supplied at such a price; and good as the prize apparatus may be, as far as it goes, anybody wishing really to do any good at the study of blowpipe chemistry will require to purchase many other little items with which to supplement his guinea set. These additions will not find room in the box of this set, and so he will, if he wishes to have a portable apparatus, require to fit up a second box for himself. Of course the guinea set is a capital nucleus, and the items comprised in it will be far better than could be bought singly for anything like the same money. But it would have been better to have fixed the price at (say) two guineas. Something very much more nearly approaching to the complete requisites might then have been obtained, compactly arranged in a case, and purchasers of such a set would have expended, probably, less money than they now have to do before they can consider their outfit equal to what can be done, and ought to be done with blowpipe apparatus. Those who have worked a great deal at the subject, and gained much skill and experience, know how much good and useful work can be done with a small portable apparatus; and they also know how completely misleading and worse than useless blowpipe work generally becomes in the hands of those who have not given proper attention to it, or are badly equipped.

One grave mistake has been committed by those who defined what the prize set should contain—they have retained charcoal, or charcoal on a porcelain holder, as the support for obtaining sublimates of the volatile metals, though it is well known to all who take any interest in the subject that the support made of sheet aluminium, proposed by Major W. A. Ross, is very far superior in every way. It is more portable and cleanly, much cheaper in the long run, as so little charcoal is required with it, and above all it is, many times over, a better means of testing, and raises this branch of blowpipe work to altogether a higher level than it held, either with the very best charcoal obtainable (very scarce and dear) or with the porcelain support. It ought to banish the dirty and comparatively barbarous charcoal out of every blowpipe apparatus. It is described by Major Ross in his "Pyrology," and full instructions for its preparation and use were recently given in the Chemical News.

I would suggest that another prize should now be offered, in the same manner as before, for the best set of apparatus and reagents to be sold for 5*l.* Such a set might, I am sure, be made perfectly complete and equal in every practical respect (excepting the balance) to the beautiful and costly sets made by Lindke, of Freiberg, which cost 18*l.* There should be a case of instruments, well finished, well packed and readily available; and a case of reagents, wet and dry, well contrived against risk of leakage and breakage. Both cases should fit into a stout outer case for travelling. There would be a good sale for such a complete "pyrochemical" laboratory, and its price would allow scope for Messrs. Letcher and others to try what they could do to combine completeness and practical utility with a good deal of elegance. I should suppose that 20*l.* as prize would be a sufficient inducement for a competition for this 5*l.* set. Perhaps some wealthy gentleman may follow the good example of Col. Croll and offer such a prize, or it might be offered by some society (Cornish or otherwise), or twenty chemists and mineralogists might each give 1*l.*, and hand the 20*l.* over to the Society of Arts. Perhaps Dr. Foster would take the matter up and try and raise the subscriptions, which would be readily obtained.

ANOTHER CONSTANT READER.

ILLUMINATING WITH STEAM.

SIR,—A curious invention is just announced to have been made by Mr. Stephan, of Worcester, who is stated to have discovered a means of converting steam into a burnable gas without the use of coal, coke, wood, oil, or any such combustible. Now, we of course know that this is either an exaggeration or a misstatement; yet there is no doubt something in the invention, as it is practically the same claim as was made some time since in the *Mining Journal* by the late Mr. Isham Baggs; the invention of Mr. Stephan is no doubt a process of decomposing the steam and carburetting the hydrogen separated. It is stated that Mr. Stephan generates steam in an ordinary boiler, and passes it through perforated chambers into a retort, where it is converted by the use of certain substances into hydrogen, and subsequently into carburetted hydrogen gas, which he passes through cold water into a gasholder. He obtains in the process tar, pitch, lubricating grease, ammonia water, and other products (including lime and cement). He asserts that three of the residual products alone are of such value as to yield a profit of 150 per cent. on the manufacture, so that the gas, which he can make of 40-candle power, could be given for nothing, and the receipts for all the products beyond the three in the form of a bonus to encourage people to take it.

Now, the claim that he obtains in the process tar, pitch, and lubricating grease, and the assertion that he uses steam, proves a great deal. In the first place, he must use coke or similar fuel to raise

the steam, and the question then is how many cubic feet of the hydrogen separated can be obtained from each ton of fuel consumed. This was the obstacle which Mr. Baggs encountered. The gas produced was good enough, but the cost, including the carburation, was so great that it was found more economic to produce the gas direct in the usual way. We know as a matter of fact that the decomposed steam without subsequent treatment is not applicable as illuminating gas, but requires to be carburetted, and whatever hydrocarbon he uses for this purpose—whether tar, shale, or one of the kerosene spirits or by-products—the carburation is so costly that the gas when ready for the consumer can only be sold at a much higher price than coal gas. It is stated that it is true Mr. Stephan's boiler "if heated by the gas manufactured from the steam therein generated, but only a small quantity is required for this purpose, and anyone starting works with an eye to the 150 per cent. before-mentioned will, therefore, necessarily have gas on his hands of a superior illuminating quality, which he must get rid of somehow—by sending it up a chimney if no neighbouring municipality would take it away." Mr. Stephan will probably find it more difficult to produce the gas than to erect a chimney, but supposing him to produce gas it would be better for a municipality to purchase it, as we all know that what is obtained for nothing is always worth what it costs. Reliance upon secondary products has always proved delusive, so that no attention should be paid to Mr. Stephan's statements in respect of them until complete details are before the public.

March 13.

STEAM GAS.

STEAM TRACTION ON TRAMWAYS.

SIR,—I observe that a movement is again being made to secure the necessary authority for the use of steam locomotion on tramways, and, provided certain conditions were attended to, I really cannot see any valid objection to it. In the first place it would, of course, be necessary to limit the speed, and I should think 4 miles per hour within 2 miles of the Mansion House and at all places where single lines are in use, or where the police authorities of the district may indicate slow speed to be necessary. This police restriction might readily be indicated by requiring the tramway companies to paint all lamp-posts in restricted districts red as day signals, and red crosses on the glasses of the lanterns as night signals. In unrestricted districts a speed of 6 miles per hour might be allowed, and where in unrestricted districts the width of the road and its straightness is such that the tram-engine can be seen for 200 yards 8 miles per hour might be permitted, but this should in every case be the maximum. By this arrangement it would be practicable in every case where there is half-a-mile of wide straight road to run 680 yards at 8 miles and 200 at 6 miles per hour. As to the tram-engine itself it should be compulsory to keep it painted at front and back a brilliant red as a day signal, and to keep two red lights constantly burning in front of the dashboard at night. The dazzling bull's-eye light, however, should be prohibited, as it invariably is prohibited on the Continent, and instead thereof there should be used a plain lantern with red glass sides, the flame being screened with thin ground glass. The readiness with which a signal of this kind can be seen by drivers and pedestrians is astonishing, and the use of it would not in the slightest interfere with the coloured lights at present used to indicate the destination of the car. Another advantage of the light mentioned is that it never affrights the most restive horse, and is, therefore, not dangerous.

With regard to the engine itself, it might be rendered absolutely free from accident without interfering with its successful action. The size of the driving-wheel should be limited to 2 ft. diameter, and of even weight all round; and the power should be, by compulsion, transmitted directly from the cylinder to the driving-wheel crank. The effect of this would be that to attain 8 miles per hour the engine would have to make, in round numbers, 120 double strokes per minute, and the forward motion of the car would always be dependent upon the absolute steam-pressure, and not upon impetus or accumulated power, as in the case of a train upon a railway. The engines could be made to work quite noiselessly, and the escape of steam could be entirely prevented, so that the engine would really be less nuisance than the present system of horse traction, and for an audible signal of the approach of the cars the present walnut-bell system, which cannot possibly cause the smallest annoyance to anyone, could be retained. I quite hope to see steam traction introduced, and I believe that all impartial persons would consider the restrictions proposed admissible on the one hand and sufficient on the other.—March 12.

ENGINEER.

NEW INVESTMENTS—BLUE TENT, FALL CREEK, AND HULTAFALL COMPANIES.

SIR,—With the hopeful signs that peace may be maintained in the East of Europe, one of the first thing that occurs to the mind of the investor is—how can I profitably employ my spare capital? To this very natural question there is an equally natural answer, and it is this—Seek for the stocks and shares with good prospects upon which there is little or no liability, and that have remained either almost stationary through the late trying crisis, or have, perhaps, from the general effect of warlike apprehensions suffered a heavy decline, and the chances of profit will be very large indeed in favour of the purchaser. Sometimes this last rule may be relaxed in favour of shares which are intrinsically so good and so firmly held that all efforts to depreciate them have not only failed but have had the opposite effect; but this latter is not a safe criterion of value, for it is possible for a stock or share of scarcely any worth to be so much over sold as to produce a great rise in price by the simple effort to re-purchase. Thus we see that quite irrespective of merit we may at times have high or low quotations. To study the art of investment is of the utmost importance to every person who wishes to place his savings in safe and profitable undertakings. But having studied, the next thing is to be able to apply the knowledge thus acquired, and this is often much more difficult than it seems. The rival claims of many good properties tend to bewilder rather than enlighten; but being satisfied that many shares are good, a very little weight thrown into the scale may help to a decision, and that is the purpose of this letter. The golden rules of paid-up shares, uninflated prices, and good prospects of success could not be better illustrated than in the three classes of shares that I have selected to put before intending investors—namely, the Blue Tent Hydraulic Gold Mines, the Fall Creek Lakes Water Company, and the Hultafall Lead and Blende Mining Company. The Blue Tent Company was brought out about five years ago, with a capital of 150,000*l.*, in 30,000 shares of 5*l.* each, and notwithstanding the depressing times, the large amount of money that has been spent on works such as a tunnel of 30 miles long, and other heavy outlays, the shares are quoted at 3 to 3½—a fairly good guarantee that this company has a backbone, and is not likely to go the way of many other mines, both home and foreign; in fact the prospects, one might almost say the certainty, of large and regular dividends being paid is now assured. The first clean-up of the season of something under a fortnight gave \$6700 as a result, and when it is said that the company will in all probability be able, by its arrangement with the Fall Creek Water Company, to continue its operations throughout the year, there is every reason to congratulate the shareholders on the one hand, and to invite the attention of investors to it on the other. The property is both rich and extensive, and it will take generations to exhaust it. An opportunity like this does not often come, and should not be lost by those who really want a good channel for the employment of money with safety and profit.

In respect to the Fall Creek Water Company, which is of recent introduction, this company is a happy thought of one of the Blue Tent directors, whose recent visit to that company's property convinced him of the necessity of something of the kind to develop more fully the great riches of the gravel beds, and to enable the company to work on uninterruptedly throughout the year. Having obtained concessions from the proprietors of several water rights, the gentlemen before named proceeded to England to form a small company of 20,000*l.*, in 10,000 shares of 2*l.* each; but only 15,000*l.* has been issued, the balance of 5000*l.* being reserved for future water purchases, if needful. All the water thus obtained will be sold to the Blue Tent Company, which, while it will put the Fall

Creek Company into a 15 to 20 per cent dividend, will, it is anticipated, at the same time enable the Blue Tent Company from this supply of water alone to pay from 5 to 10 per cent. on its whole capital. The fact that the directors are the same in each company will secure the rights of both, and the shareholders will profit by the combination. This company must not be classed with speculative ones. The commodity which it deals in is eagerly bought up in the district where it is situated, water rights being very valuable in California; and with such large reserves—it is computed 150,000 miners' inches—that will be available when the various reservoirs belonging to this company are completed, there is ample justification for the foregoing statements. These shares, which can be obtained at about par (2*l.*), would be in very proper company with Blue Tent, as the profit of one would naturally imply the same of the other.

The Hultafall Company, richest and best of recent introductions in mines, has everything prepared for a vigorous campaign; the machinery it is expected having been started to-day, good returns will be made at once, to be greatly increased within the next month or two. The lode in the bottom of the mine is richer than previously for lead, and leaves nothing to be desired but continuance, which is not in the slightest degree doubtful. In ordinary times these shares would have been at a great price, and as nothing can permanently resist success of so high an order as that which has attended this company, to presume on low prices in deferring to purchase will be to neglect the greatest certainty since the early days of the Van furor. I called the attention of the public some time since to this property through the Journal. From the remarks then made there is nothing to retract, and the few sentences now devoted to the same subject are intended to emphasise what was then said.

Cornhill, March 13.

M. F. DORMER.

SOUTH AUSTRALIA—COMMENCEMENT OF PORT AUGUSTA RAILWAY.

SIR,—It is some time since I addressed you, for the state of the copper market has had such a depressing effect on mining that I have had nothing to write about, and it would have been a thankless task to continue sending you a series of jeremiads, which could have done nothing to improve the state of affairs. I have now, however, the pleasing task to announce the actual commencement of the Port Augusta Railway, the first sod of which was turned by his excellency Sir Wm. Francis Drummond Jervois, K.C.M.G., on Friday, Jan. 18. It is for this I have laboured, for this I have written and spoken for the past sixteen years, and I hope I may live to see the completion of the line. I enclose you the report of the ceremony, and hope you will be able to publish at least an abridged account of it, and our excellent Governor's speech, and that of Mr. E. Cooke, M.P., unabridged. His excellency's ideas of the colony are entitled to respect, for he is a man of great shrewdness and powers of observation, and evidently very broad and far-seeing in his views. We regret that he is about to leave us for a time, chiefly lest the course of European events should induce the British Government to retain him at home; but should he return, as he hopes to do in six months, then probably the colony will greatly benefit by his continued residence amongst us. As it is, we have no doubt during his visit to England his excellency will speak well of South Australia, and the colony will become better known from his representations amongst a large and important class in England.

Mr. Samuel Higgs, formerly well known and esteemed in Cornwall, and more recently manager of the Wallaroo Mines, was intending to return to England, but has altered his determination, and decided on establishing himself in Adelaide, as a mining surveyor, to inspect and report on mineral properties, for which he is eminently qualified. He has great faith in the mining future of South Australia.—Adelaide, Jan. 26.

RESIDENT.

ROCK DRILLS.

SIR,—We will thank you to publish in your next week's Journal the enclosed correspondence which has passed between Messrs. Le Gros, Mayne, Leaver, and Co. and our firm with respect to the challenge by Messrs. Le Gros and Co. to run the Ingersoll against the drill of any other maker.

SALMON BARNES AND CO.

Ulverston, March 12.

Ulverston, Jan. 3.—SIR: We have read with considerable interest the letters published in the Journal for some weeks past. In reply to the challenge of Messrs. Le Gros, Mayne, Leaver, and Co., contained in your issue of Dec. 22, to run one of the Ingersoll drills against the drill of any other maker, we beg to state that we are prepared to accept the challenge, and to run the Roanhead drill against the Ingersoll, in such mine and upon such terms as may be agreed upon.

SALMON BARNES AND CO.

Canal Head Foundry and Engineering Works, Ulverston, Jan. 8.—DEAR SIR: Referring to your letters in the Journal, and our acceptance of your challenge in last Saturday's issue, we beg to lay before you for approval the following rules for the trial:

- 1.—You select three mines, and we will select three, and then draw for choice; the mine drawn to be the mine at which the trials are to take place. Note, in selecting the mines you would obtain the consent of the owners to the use of the necessary power, and we would do likewise.
- 2.—Each drill to drive a level for 14 days or 28 days as you may elect, and the work done, cost being taken into consideration, to be the test.
- 3.—Each party to drive in the same level—that is to say, you would work your drill 14 days, and then we will go into the same level and work ours for a like period; choice as to who goes first to be drawn for.
- 4.—The engineer of the mine selected to be the judge.
- 5.—Each party to pay his own costs.

Perhaps the mineowners might be disposed to allow a price per fathom for driving the level, which would reduce the cost of the trials. The mines selected to be mines in which neither you nor ourselves have any interest. We shall be glad to hear from you.

SALMON BARNES AND CO.

Messrs. Le Gros, Mayne, Leaver, and Co., London.
London, Jan. 9.—DEAR SIR: We are in receipt of your favour of the 8th inst. accepting our challenge for a trial of rock-drills under certain conditions which you specify. We shall, of course, be very pleased to carry out the trial; but we think it advisable that other drill manufacturers should, if possible, be induced to compete so as to render the trial of importance, and show results. We shall be glad, therefore, if you will be good enough to use your influence to induce other makers to compete—for instance, Capt. Thomas might be applied to, to test the Barrow; and if we can do anything in the same way we will. In the meantime, we will ascertain the names of several places suitable for the trials, and if the consent of the owners be obtained we will submit the same to you.

Messrs. Salmon Barnes and Co., Canal Head Foundry, Ulverston.
Canal Head Foundry and Engineering Works, Ulverston, Jan. 15.—DEAR SIR: We are in receipt of your letter of the 9th inst., but can see no reason for introducing the drills of other makers into the proposed trials between the Ingersoll and the Roanhead, and shall be glad to hear from you definitely as to whether you are prepared to accept the terms named in our last, and how soon you will be ready for the trial.

Messrs. Le Gros, Mayne, Leaver, and Co., London.
Canal Head Foundry and Engineering Works, Ulverston, Feb. 22.—DEAR SIR: We are very much surprised at not hearing from you in reply to our letter of Jan. 26, and beg to remind you that we are now awaiting its acknowledgment.

Messrs. Le Gros, Mayne, Leaver, and Co., 60, Queen Victoria-street, London, E.C.
London, Jan. 21.—DEAR SIR: We have received your favour of the 15th inst., and would have replied earlier, but the member of our firm having this matter in hand has been absent for some days. We agree to run our drill against yours, but we do not quite accept the conditions you propose.

- 1.—The mine to be worked in shall be approved by both, and not drawn for.
- 2.—The drills must run simultaneously and change headings, as may be agreed before commencing.
- 3.—Each party shall drive the same level alternately.
- 4.—The captain or engineer shall be the arbiter in case of difficulties arising during the work; but the facts themselves shall be given to the public to judge.
- 5.—One stipulation, from which we will not depart, is that each party shall supply their own plant entirely—drills, air compressors, and tubing—and the price of these shall be forwarded to the Mining Journal, with the statement when the trial is to begin. Further, at the end of each week a report of the progress made shall be sent to the same paper, and at the end of each month a complete account also, vouched for by the mining captain, for the cost of the work done, including the following particulars—number of men, and wages; coal, oil, &c.; steel; dynamite; sundries; repairs; and a report from the captain as to the state of the entire plant.

You will easily see that anything under a month's constant work would be useless as a test—in fact, we should prefer running three months. Having proposed a trial for the sake of proving the superiority of our drills, and as it will entail a considerable outlay and supervision, we do not wish to run each drill that is in existence separately, but think it desirable that others should compete at the same time. Captain Hoskins writes us that he would have no objection for such trial to take place at South Roskear; of course, with the consent of the adventurers. We can also ask Colonel Fludger to allow the trial to take place at Austell Consoles. Please say if you object to either of these.

LE GROS, MAYNE, LEAVER, AND CO.
Messrs. Salmon Barnes and Co., Canal Head Foundry, Ulverston.

Canal Head Foundry and Engineering Works, Ulverston, Jan. 26.—DEAR SIR: Your letter of the 21st inst. is received.

1.—We should be glad to comply if a mine could be agreed upon; but we do not see how this could be done, seeing that we should fix upon a mine in this district. We also consider that the challenge, having been made by you, we are entitled to

name reasonable conditions. Our object in proposing to draw for choice of mine was to show we desired no favours, but the strictest fair play, otherwise we certainly consider we are entitled to choice of mine.

2.—We have no personal objection to this, but the mine owners whom we have consulted object to it on this ground—that it would interfere with their work.

3.—If the drills are to change headings alternately it will cause endless disputes with the men as to the way in which the headings are left at the time of the change. We think the proposal made by us is as fair for the one as the other, and we are prepared to run the risk of having to drive the level in harder stone than you have had to contend with, should a change in the rock occur, and you ought to be prepared to do the same. We will draw as to choice of start.

4.—The arbitrator to decide the result by the work done at the least cost. We quite agree the facts should be sent to the papers.

5.—We see no necessity to supply our own air compressor and tubes, but are quite content to use whatever plant is on the mine chosen as long as you do the same. If you wish to put down your own plant we should be quite content to use it. There is no necessity to go to the expense of putting down plant to test the merits of two rock-drills. It is not a trial of plant but rock-drills, and so long as both competitors use the same plant, and employ their own staff, it must be equally fair for both.

We have no objection to the greatest possible publicity being given to the trials and the results, but think 15 days each or a month at the outside for each drill to run would be a fair test. We do not know the mines you named.

Messrs. Le Gros, Mayne, Leaver, and Co., 60, Queen Victoria-street, London.
London, Feb. 25.—GENTLEMEN: Your letter of the 22nd inst. is at hand. We also received your letter of Jan. 26, in reply to ours of the 21st of the same month; but, as you did not agree to our conditions, we considered the matter done with. Our object was to have an exhaustive and instinctive trial, and for this reason we wished to compete with a number of drills at the same time. The merits of the Ingersoll being so well known, we do not consider it worth the time, trouble, and expense to run against one competitor only.

Messrs. Salmon Barnes and Co., LE GROS, MAYNE, LEAVER, AND CO.
Canal Head Foundry and Engineering Works, Ulverston, March 6.—GENTLEMEN: Your letter of the 25th ult. The partner who attended to this matter has been from home for more than a week. We can but express our surprise at your refusal to work your drill against the Roanhead, and under the circumstances shall send the correspondence to the Mining Journal.

Messrs. Le Gros, Mayne, Leaver, and Co., London.

ROCK-BORING MACHINES.

SIR,—Mr. J. Williams is either a careless reader or guilty of wilfully contorting plain Saxon. I never said it took the Ingersoll drill ten days to bore three holes 3 ft. deep, but that this represented the total work done after it had been erected ten days, and which was considered an "admirable result." Mr. Williams might have thought that I should not have ventured to make assertions in such a widely-circulated paper as yours without being in possession of properly authenticated facts, or that prejudice (which has no existence except in his imagination) would induce me to fabricate a story to decry the drill in question. Perhaps to settle the whole matter Mr. Williams will kindly publish the exact facts of work accomplished at the Manx Mines during the time referred to.

Rushen Mine, Isle of Man, March 12.

JOHN BARKELL.

ROCK-BORING MACHINES.

SIR,—Your correspondent "J. Williams" writes somewhat loosely on the subject of rock-drills. He, however, intimates to your readers that he possesses considerable knowledge with reference to this class of machinery, and is only anxious to set forth the truth. Mr. Williams writes—"I have visited every place in the Isle of Man where the Ingersoll drills are at work." Now, will he be good enough to name the various places he visited, the number of Ingersoll drills in use at each place, the pressure of air employed in working them, the dimensions of the levels or shafts in which the drills are running, and the cost and speed incident to the driving or sinking, as the case may be. If it shall be found that the Ingersoll drill is only in partial use at one mine then Mr. Williams' letter must be pronounced a misleading one. Further, he offers an opinion that the Ingersoll drills at work in the Island will bear favourable comparison with any other drills at present in use in the Isle of Man. Now, to arrive at such an opinion Mr. Williams must have seen other drills at work, and have collected certain statistics of a comparative and valuable character. He will, therefore, please furnish these statistics for the benefit of your readers, or suffer the imputation that he is unable to do so, and that his opinion and statements are of no value. I do not find fault with Mr. Williams for writing favourably of the Ingersoll drill, but when he undertakes to correct the statement of another he is bound to make it appear that he is strictly accurate.—Douglas, March 12.

ALPHA.

A SHORT REVIEW OF THE CARDIGANSHIRE MINES.

SIR,—Kindly allow me a small space in your esteemed Journal to make a few remarks on these mines. Having Capt. Francis's map of all the mines of note in this county before me for a reference (which is no ordinary authority), I can see at a glance that there has not been much energy displayed in developing the mines during the past 300 years. Talybont (or Allt-y-Crib) Mine shall be my starting point, which was worked in the reign of Charles I. by Messrs. Middleton and Bushell, and yielded 200,000*l.* worth of ore. All was taken away above the adit level. It is true that they have sunk a few fathoms deeper, but nothing of any note was done below the adit level. One company after another goes on scraping away what ore they can get above the adit, and as soon as they work out the few arches they may find after the old people they give up, under the impression that they have unbottomed, and untapped too, all the ore existing in the sett, thus giving an opportunity to the poor workpeople to obtain a grant on it, and to display their energies and abilities in discovering another block of ore ground. By this mode another company will come forward and purchase the sett, not with the slightest intention to develop the mine in a miner-like manner, but under the impression that they would be able to derive large profits from the discoveries already made. To say the least about such mining, which is not confined to this county alone, it is ridiculous to bear in mind that it has taken 300 years and more to attain the depth of the adit level on such an extraordinary mining property as the Allt-y-Crib, or Talybont, sett.

Higher up the Caelan Valley—about 3 miles—I find another mine, called Blaen Caelan, on the same magnificent lodes, which has been at work for about 30 years, and is now down 30 fms. Six feet a year only has been sunk; the amount of ore sold was 50,000*l.*; the value per fathom in depth about 1600*l.* Every drift sunk the lode increases in value, and I cannot entertain a doubt that this property would prove equal in returns to any in the county if a moderate amount of energy were displayed in developing the lode systematically. As it has lately changed hands, let us hope the new company will do justice to themselves, to the mine, and to the mining community at large, by providing means to put the mine in substantial order before making an attempt to dress any ore. The ruin of our mines is that parties want to dress the lead before it is found; but this is not the case at Blaen Caelan, for they had previously discovered a long run of it many years ago.

About 2 miles further east, and on the same lodes, are the Cambrian Mines—one of the Cardiganshire Van—or, in other words, equal to any mine in the Principality; in fact, it is a mountain of lead and copper ores. This, like many other mines in the county, was worked in the time of Charles I. by Messrs. Middleton and Bushell, and an enormous amount of profit was derived from it then as well as up to the present time. To do justice to the present management, I should here remark that the mine, I believe, never looked better than it does at the present day. During the past 300 years they attained a depth of 30 fathoms, and sold 1,000,000*l.* worth of lead and copper ores. The rate of sinking convinces me that they were not much distressed for ore. I need not hesitate to prognosticate an important discovery of lead to be made, ere long, in this extensive sett. The lodes run eastward, and are worked on in the Great Dylife Mines.

The next on the south side is the Eaglebrook Mine, on a parallel lode; operations have been carried on here during the past 25 years by the present proprietors, and the mine is now down 40 fms. from surface. They sold 40,000*l.* worth of lead and copper ores, and have on the mine an excellent and extensive field of machinery, and if a moderate amount of capital were provided to enable an extensive exploration of the lode I can hardly doubt that the company would be handsomely rewarded for it.

On the same lode, and bounding it on the east, is the South Cam-

brian Mine, which has been in the hands of several parties during the past 25 years, but for the want of capital little has been done in the way of developing the lodes embraced in this extensive sett.

About 200 fathoms to the south of Eaglebrook is Henflich and Hafan United Mines. These mines are only down about 10 fathoms below adit level. Notwithstanding the magnitude of the lode and its large masses of gossan, carbonate of lime, quartz, and the lead embraced within two well-defined walls, no one seems to care to trouble himself to provide the required amount of capital to follow up the discoveries made in this mine.

About 2 miles to the west, and on the same lode, are the Voelglomen and Tynewydd Mines, where some excellent discoveries of lead ore have been made, but I regret to say the same remark applies here as at the Henflich and Hafan—no capital provided to explore the lodes being the only barrier to making large returns from these mines.

The Cofn Gwyn Mine is situated about 2 miles north-west of the Voelglomen and Tynewydd Mines. This mine was down 20 fms. below surface 22 years ago, since when they have sunk 10 fms.; if 15 fms. more were sunk a junction of two powerful masterly and well defined lodes would be met with, one of which underlies south while the other underlies north. At the rate they have been sinking it will take 33 years more to reach that depth. The result of attaining such a point I shall leave your numerous readers, who no doubt have seen such events, to dwell upon.

To the south-west of the latter is the Mynydd Gorrdu Mine, now turning out so rich (I should here remark that the Mynydd Gorrdu, Voelglomen, Tynewydd, Hafan, and Henflich are on the same lodes); this mine is in rapid course of development, and will soon be down 35 fms. below adit. It requires no comment in this letter, as it is regularly reported in the Journal.

The next and the most westerly mine on these lodes is the Elgar Mine, which is now in an efficient course of development, and it is promising fair to rival its next neighbour—Mynydd Gorrdu—when similarly developed.

I shall notice some other mines on the map in my next.
Cwm Darren, Goginan, March 13. A. WILLIAMS.

BLAEN CAELAN UNITED LEAD MINES, CARDIGANSHIRE.

SIR,—We observe in last week's Journal a remark by one of your correspondents in reference to the recent re-starting of the Blaen Caelan and the South de Eresby Mountain Lead Mines, that "it would be more fair and above board if the price to be paid for the property were to be inserted in the prospectus." We know nothing about the latter company, but as regards the Blaen Caelan Mines (in which we and our friends are largely interested) we beg to state that the prospectus does give that information most fully and unreservedly. Probably what has come before your correspondent's notice has merely been some reports—not the prospectus, which it has not been necessary to advertise, inasmuch as every share was at once subscribed by local people of influence and ourselves and friends, who had been quietly carrying on and developing the mine for many months previous to the registration of the Blaen Caelan United Lead Mines Company (Limited), under which title it will henceforth be carried on. The formation of the company was, in fact, merely the conversion into a limited company of what was previously a partnership, in the course of the last 12 months of which the extensive plant and machinery (capable of treating from 40 to 50 tons of lead per month) have been completed, sales of lead commenced, and large reserves of ore already laid open, which reserves have since been materially increased, the lode in the deepest part of the mine (53 fms. from surface) being for the part carried by the winze worth fully 30l. per fathom, with every appearance of still greater improvement. All this having been effected prior to the registration of the company, in whose favour the lord has agreed to grant a 21 years lease at a reduced royalty of 1-16th, including therein West Blaen Caelan sett, and one of the elements of its formation being the subscription of a further 4000l. cash working capital. We think the new company may be considered as certain of the success which your correspondent kindly wishes it, and will, undoubtedly, in the course of the current year take its rank (probably a high one) amongst the English dividend-paying mines.
Great St. Helens, March 12. CHURCH, MILSTED, AND CO.

BLAEN CAELAN UNITED MINES.

SIR,—For several weeks past I have read with satisfaction the numerous remarks made by various correspondents in commenting on the above property, which has only been recently registered as a public company under the Limited Liability Act. I preface my letter with these observations to show that I am not captious in calling attention to some inaccuracies which appear in last week's Journal; where, under the heading of "Report from North Wales, Salop, and Cardigan," there appears the following paragraph:—"Two lead mines are announced as resuscitated in North Wales, one under its old name Blaen Caelan, in Cardigan, and one old Penrallt under the new title of South de Eresby Mountain. It would seem more fair and above board if the price to be paid for the property were to be inserted in the prospectus, but this old practice has gone out of fashion. I sincerely hope both these mines will prove success, and as sincerely, for the credit of mining, do I hope that the investing public are not charged a high price for assisting in the necessary cost of their development."

The Blaen Caelan United Mines is the name of this new company, as the West Blaen Caelan sett has been incorporated, and I may add that Cardiganshire is in South Wales, and not near Penrallt. The prospectus (a copy of which I enclose in proof of my assertion) does state the price paid for the mines, and myself and friends at Aberystwith have taken up more than half of the capital, the remaining portion being all secured by friends in London. All the shares are of the same denomination, none of them being free shares, and I am glad to say we have after the outlay of a few thousands made the mine throughout both underground and at surface as presentable as any mine in the district, and it is open at all times for inspection upon application to myself at Aberystwith, and I am confident no mine can show a finer course of lead than we have for the last 8 fathoms under adit—and it continues to improve as we go down.—Aberystwith, March 13. JONATHAN PELL.

P.S.—I had almost forgotten to refer to your correspondent's expression of a hope that the public will not be charged a high price for assisting in the development of these mines. With regard to Blaen Caelan there has undoubtedly been more actual cash expended from first to last upon the property than the amount charged the company, all of which is taken in shares, which shares (as mentioned above) are not free, but all subject to a considerable further liability. Perhaps the best evidence I can adduce that the price is not too high is to express my belief that Blaen Caelan is not one whit less valuable than the adjoining mine; which, according to the quoted and dealing price of the shares, is selling in the market for 125,000l., while the total capital of the Blaen Caelan United Mines, even including the 4000l. reserve capital, only amounts to 24,000l.

GREAT WEST VAN.

SIR,—Your correspondent who signs himself "Play Fair" seems so much like the one he vainly would defend that it is quite unnecessary your valuable space should be taken up to expose the ignorance of people who do not know what the term bonus, or bonus shares, means, who confound 18,000 shares which cost the vendors 36,000l. with the same shares given to a broker to induce his friends to become shareholders. All the pretentious honesty and desire to sift what a body of directors have done, having been privy to all that was done at the formation of the company, and during the existence of the same, seems so much like a bag of pepper thrown over one's shoulders for the comfort of one's friends, that I leave it for your correspondents who speak so much of their honesty, but of whom I have been bid "beware." He who proclaims his own purity and attempts reflections on a body of directors who fear no investigation of any act of theirs in the discharge of their duties to the shareholders of Great West Van, is one who had better examine himself

first. I shall pass by all personal allusions in your correspondent's letter, experience having long taught me that it was a waste of time and words to argue with those who contradict themselves by the acts of their lives, as in the words they utter. "Fair Play" offers no obstruction, suggests none to any investigation. The mine is in liquidation, and that at the instance of Mr. Ward, whose greatest grief is that his own nominee was not appointed. Of his share transactions, and to whom the shares in his name belong, I care nothing, I insinuate nothing, let those interested see to the best means of developing the most legitimate property with which the broker of the company has been identified. Of Mr. Seddon's remarks about the honest ring—ears and musical tastes differ to me it is the ring of half a vessel. Of Mr. Ward's letters, they are no evidence at all in his favour, but the evidence of contradiction, the natural sequence in all his arguments. They may suit his purpose to dangle his name before your readers as an advertisement, but your contributor has no selfish purpose to serve. FAIR PLAY.

March 11.

NEW CONSOLS MINE.

SIR,—This mine has fallen from all its greatness into the "gulf of liquidation," and the tiresome delay in the settlement of the merchants' accounts and the miners' wages has aroused the spirit of the creditors to such a height that they have taken proceedings in the Stannaries Court to compel a more expeditious mode of procedure. This is not much to be wondered at when it is considered that the present staff of officials consists of two liquidators, an agent in possession representing the Duchy, another on behalf of the debenture holders, and another for the mine, the expenditure altogether amounting, I believe, to something like 50l. per month, besides legal expenses. This has been going on for some months past, and from present symptoms may continue for many months longer unless the creditors succeed in causing the cumbrous wheel of liquidation to revolve with an accelerated degree of velocity. The incidents connected with this unique enterprise would form a volume of striking curiosities. First of all would appear in this volume a lengthened and warm controversy on the part of different anxious claimants to the honour of the discovery of the tin which was to totally eclipse Dolcoath, followed by a glowing description of the different processes—Nascent and others—for the separation of the tin from the various other mineral substances, altogether too numerous to mention. A statistical tabular statement of the number of discharged agents, chemists, engineers, and inventors of dressing machinery might also be added, with the sum total of the expenditure of capital in surface experiments and machinery for the return of the riches discovered underneath, and only requiring a certain kind of treatment to fill the coffers of the fortunate shareholders with immediate and untold wealth.—March 13. OBSERVER.

NEW CONSOLS.

SIR,—The creditors of this mine may as well make up their minds at once to suffer the loss of all their claims, for it appears that there is no redress for them. Some of them filed petitions in the Stannary Court, and upon the hearing of evidence before the Vice-Warden last week the petition was dismissed, the Vice-Warden thinking that the liquidators were doing their best for the interest of the parties concerned. The "parties concerned" are no other than the mortgagees, or debenture holders, whose claims far exceed the value of all the effects on the mine. But some of the effects lately on the mine—ores, coals, &c.—were sold to pay 8s. in 1l. to the labourers, the balance of their claims being still unpaid, and also the full claims of the other creditors. The petitioners wished to supersede the voluntary liquidation, and to have the affairs wound up compulsorily to put a speedy end to the heavy cost now current—amounting to 50l. per month, and to make the directors responsible for all the debts; because, as was shown at the hearing, they misled the creditors as to their financial position. They obtained goods by representing that 10,000l. fresh capital was paid-up, which was not the case; but that statement procured credit for goods. They took a large stock of coal and never paid for it, but sold it before it was removed from the East Cornwall Minerals Railway station at Monk's Corner. The failure of this company came upon me with great surprise, for I thought that they were quite solvent, and even prosperous, or in a fair way to prosperity. I hope that the experience of the creditors in this case will make them and others careful in dealing with directors of limited companies.
Truro, March 11. R. SYMONS.

P.S.—At a meeting of the creditors held at Plymouth previous to the determination for a voluntary winding up, the directors—or one of them—promised that all the creditors should be paid in full. I should like to see a performance of that promise.—R. S.

PHOENIX LEAD MINE.

SIR,—A few months ago Capt. R. Pryor and Mr. F. W. Michell agreed to sell to Capt. John Burgan this mine and the machinery and materials thereon for 1500l. The agreement was embodied in a letter, and was admitted in the presence of several witnesses. Owing to the non-fulfilment of the contract, the vendors sued Capt. Burgan for the amount in the Vice-Warden's Court, and the case was heard a few days ago, when the plaintiffs were defeated on the most unsatisfactory grounds. Defendant alleged that he made the agreement as agent for other parties, and that he was to have 250l. commission out of the 1500l., which the vendors say was untrue. Mr. R. M. Paul, who was solicitor for the defendant, argued that the plaintiffs should have given the names of all their partners in the claim, one of whom was Mr. Simmons—a very weak argument, but it appeared to have weight with the Vice-Warden. I have heard that Mr. Marrack is about to apply for a new trial, when additional witnesses will be produced. A jury should be empanelled to decide the matter.—March 11. HEARER.

LIMITED LIABILITY MINES VERSUS COST BOOK.

SIR,—Some little ventilation on this subject has been from time to time made by your columns. I have just received the balance-sheet of Llanrwst Mine, which for a long time has been prominently before the public. Of the merits of the mine I purpose to say little: 60,000l. has been called up in this mine, and the concern owes 3300l. to sundry creditors, as well as the costs incurred since November, amounting probably to 1500l. or 2000l. more. As assets they have lead ore at surface estimated at 1015l., sundry amounts 1925l., making a total of 2940l., or liabilities exceeding all assets by 3000l.

From the reports recently forwarded to the shareholders it will be seen that 45,000l. have been paid in shares for a mine little below the adit, only 16 fathoms. Capt. Knapp tells us a large amount of work has been done. In reading Messrs. Kendal and Lane's reports, availing that an adit level exists for 150 fathoms east and west of the shaft, I fail to see any consideration for 60,000l. The counter lode has been driven on 5½ fathoms in the 14 ft. level, and appears to have laid open all the ore ground available below the adit for stopping. The back of the adit, west of Prospect shaft, is said to contain 100 fathoms of ground unstopped—that is, if 10 fathoms high, 10 fathoms long, and is said to contain 200 tons of lead. The end, although driven but 10 fathoms, is suspended and poor. If the ore supposed to exist here be realised the company will be exceedingly fortunate.

Never did any miner who has studied mining see such lengthy and laboured reports on such a contracted property as this, and for which the public have been asked so large a sum. Mr. Kendal says he is pleased with the prospects, and of its becoming a valuable property. When? After another 60,000l. has been expended. In the balance-sheet we find the directors' fees and secretary 521l. 5s., charged, office expenses, &c., commission on sale of shares, and rent, 626l., making a total of 1147l., or 22½ per cent. of the money actually, or said to be, expended at the mine. The directors and secretary receive 521l. 5s. For what? Captain Knapp has his 12l. 12s., or 15l. 15s., a month for superintending 36 men. Capt. Josiah Thomas or Capt. Teague do not receive one-half the salaries of these directors and secretary for superintending the labour of 1000 people, and descending mines of 300 to 400 fathoms deep.

The Limited Liability law has opened the door to speculation in

all manner of ways, but I think that on the Cost-book it would have been impossible to place an undeveloped and untried property like Llanrwst at a premium.—March 12. X.

WEST FOLDICE.

SIR,—In the present state of the mining interest in Gwynnapp the stoppage of this little mine is a calamity, because, small as it is, it afforded employment to many families while at work. It is a highly promising mine, and its suspension is the consequence of the influx of water from Unity Wood Mine, at the eastern boundary. It was confidently affirmed by many persons that this effect would not come; that the compactness of the rock would keep back the water, and so it did till the water rose to a shallow level. Then the pressure was so strong as to force the water into West Foldice, and overpowered the little steam-engine at work there. It was resolved to erect a more powerful engine (70-inch), if Lord Falmouth would grant a lease to the company of Unity Wood sett. This, it is said, he declined to do. So this little mine is likely to be idle for a long time, unless Lord Falmouth change his purpose and grants a lease. West Foldice Company, I am told, would consolidate and work both mines effectually if that lease were secured. R. S.

March 12.

MINING IN EAST CORNWALL.

SIR,—Several letters have lately appeared in the Journal on the above subject, and the mine at St. Brevard, of which I am the agent, has been called in question. I may remark that the district is well worth looking after, and must ultimately prove itself to be a good mining locality. Mr. Nicholas Ennor, who is no mean authority, speaks well of the St. Brevard Consols as being one of the best he ever saw in the counties of Devon and Cornwall. With such masses of gossan, mundic, and spots of copper ore near the surface, it cannot fail to make large deposits in depth of rich copper ore. We have driven an adit level in the hill over 100 fms., on the course of a fine looking lode, full of gossan, peach, prion, mundic, and quartz, with black, grey, and yellow copper ore. The end at the present time is worth for arsenical mundic at least 3 tons per fathom. In this adit level, by driving east, we must meet with the junction of granite, as we are now driving in killas. There are two shafts sunk on the course of the lode; one 14 fms. deep, in killas, and the other about 7 fms. deep, in granite. Those two shafts are about 80 fms. apart, one in granite and the other in killas, with a lode in each shaft that will bear the inspection of any man, however good in experience he may be. Besides, the lode we are working on is an east and west lode, about half-a-mile south of the old mine. All that is wanted to make this a good mine is a little capital to work both the shafts by sinking them deeper, and drive the adit level as fast as we can. We shall then get under the gossan, and I have no doubt of our success. The water coming from the lode in the shafts and ends tells its own tale, being strongly impregnated with copper. We have a water-wheel, rods, balance-bobs, a lift of pumps, part of a plunger-lift, capstan, shears, rope, chains, miners' tools, and a dry for the underground men, with plenty of water-power for pumping, drawing, &c. THOS. DUNN.

Tavistock, March 14.

GUNNISLAKE (CLITTERS) MINE.

SIR,—May I ask the favour of being allowed to enquire, through your valuable Journal (which is ever ready to assist in getting information for all shareholders in every description of mining property), to know from anyone who is acquainted with the above mine how far it is supposed they have to drive to Crease's south lode, and the time it will take to do so? In April, 1876, I was persuaded to buy 50 shares, at a cost of 145l., as I was told a cross-cut was to be commenced to intersect Crease's south lode, which was to do wonders for the mine. And in the report of the fourth months' meeting, dated June 21, 1876, it is stated: "The cross-cut in the 118 is being driven south by four men, and fair progress is being made." On Oct. 23, in the same year, we have again a report—"The cross-cut south, in the 188 ft. level, has been continued driving, by four men, and we have now reached a cross-course in which driving will be continued with much greater speed." On Feb. 26, 1877, the report says, "We are still continuing the cross-cut south, in the 188, towards the intersection of Crease's and other south lodes, and we have driven 21 fathoms. The ground is much easier; we shall, therefore, be able to make greater and, we trust, satisfactory progress." In the report of June 26, 1877—"The cross-cut south, in the 188, towards Crease's and other south lodes, is being driven with all speed, and is now extended 36 fathoms; the present price for driving is 4l. 10s. per fathom. On Oct. 30, 1877, the report is—"The cross-cut south is progressing favourably. Close in the end we have cut a small branch, but as yet cannot say what it will be until some trial is made to prove it." Report Feb. 27, 1878—"The cross-cut south to intersect Crease's south lode (the main object for which the cross-cut is being driven) is progressing favourably, and we have intersected some lodes; the distance now driven is 63 fathoms."

As I know the head captain has been written to for the information now asked through the Journal, and no answer can be obtained from him, will you kindly assist me in getting the position the mine stands in with regard to this Crease's lode, and oblige—
South Shields, March 14. AN OLD SUBSCRIBER.

LEAD MINES IN THE NORTH—WEST CRAVEN MOOR.

SIR,—There is an impression abroad among lead miners that the price of the metal will decline. This is not equally the opinion of metal merchants, but there is a drooping tendency among them to some extent. We differ from this view. China, India, Russia, and Germany are among our best customers. Stocks from some occult cause—probably the hope on the part of the merchant of buying cheaper—have gone low at all the treaty ports. The famine in India caused metal merchants to buy from hand to mouth. The lead sent to both places is British production, as it is preferred to foreign lead, and is used chiefly for the package of tea. There is a prevailing conviction that the crops of Chinese and Assam tea will be unusually large, and lead will be required accordingly, and also to replenish declining stocks.

Russia is a great tea-drinking country, and consumes only the very choicest, which is carried overland from China in lead packages. This business has declined since the war began, and the imports of the metal from this country for military purposes have fallen below what they would have been if peace were not disturbed. Russia could not get lead by way of the Euxine, for it was blockaded, nor by way of the Baltic, for it has been blockaded by nature with an unconquerable barrier of ice. It is, however, a fact that the mild winter of England extended over western, central, and northern Europe, and the boon which winter placed across the Baltic is already breaking to pieces, and a month earlier than usual; all the frozen harbours of that sea, and the Gulfs of Bosnia and Finland, will be open to our shipping, and Germany and Russia will receive their lead from us to meet their usual wants, and supply the place of exhausted stocks. Besides, metals when at a low market value, thanks to the enterprise of our merchants, are pushed into new markets.

From all these reasons, and they are strong ones, we are of opinion that lead will not go further down in value. At all events, we want new fields of production at home, as we are obliged to depend upon imports to meet the greater part of our home requirements, and the lead-bearing area of country in the United Kingdom is broad and fructiferous. We hear very much more of lead in Wales than we do in England, yet the latter is extensively lead-bearing. Cornwall, Shropshire, Derbyshire, Cumberland, Durham, and Yorkshire all produce it. The lead mines in Great Britain which have been longest tapped without working out are in the North of England. One has been working for 100 years, and another for an additional century. Yorkshire possesses this metal largely, especially in the Craven district.

The Pateley Bridge and Craven Moor Mines confirm this remark. East Craven Moor is as yet prospective, but its prospects are excellent. West Craven Moor is a rich mine; a vast amount of work has been executed there, and large courses of lead have been touched, and profitable quantities brought to the surface. We are mistaken more than we think possible if West Craven Moor does not develop

immense resources, enriching all connected with it. We lately saw a letter from a responsible person at the mine itself, in which he says—"We shall have about 31 tons of lead ore, which will produce about 20 tons of pig lead at the smeltmill, after paying royalty beginning of next week. If pig-lead sold at 20s. per ton we should make a clear profit of over 2500. this quarter." When the pumping erections are fixed and working the product will be much increased. It is satisfactory for the reasons given above to notice the development and progress of our English lead mines. Let us supply our own market without foreign help. We have the resources.

City, March 13.

OLD MINER.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

BILSON AND CRUMP MEADOW COLLIERIES COMPANY.

The fourth annual general meeting of shareholders was held at the Cannon-street Hotel on Wednesday.

Mr. TOM GOULD in the chair.

Mr. JOHN S. FEAST (the secretary) read the notice calling the meeting; the report of the directors was taken as read.

The CHAIRMAN said the present meeting ought to have been held four or five weeks ago, but there were certain matters in connection with the present meeting which prevented the shareholders being called together earlier. He regretted that the board could not place a more favourable balance-sheet before the shareholders, but the general trade of the country, and the depressed state of the coal trade in particular, had been against the company having a more successful year. The general trade of the country, and the number of blast furnaces which had been thrown out of operation, had caused a vast quantity of coal, strictly used for coal purposes, to be forced into the market, as against this company's coal, which was a house coal, and the company had only been enabled to maintain its sales by reducing the price of coal to a sum below which, having regard to the Mines Regulation Act, and the price of wages, house coal ever ought to go. The balance-sheet showed a loss of 17300. The figure appeared as 26300., but to arrive at the actual deficit of the year they must take from that 4000. reserved, and two sums of 2500. each written off for preliminary expenses, and this would be further diminished by 1000. over charge in the bank charge. Upon the mere trade they had made a profit of 18000. or 19000., but notwithstanding that they had before them the fact that the close of the year found the company with a deficit of 17300., which might be added to probably by other bad debts turning up, without writing anything off preliminary expenses or improvement account. The report and balance-sheet also showed that something must be done in view and prospect of a bad summer trade to provide capital to carry them through the present depression, and until a revival of trade took place. It would be important to bear this in mind when they discussed the special business, to which attention would be drawn by a shareholder. At the last meeting a shareholder asked that the report should state the number of tons of coal got and sold, and if the shareholders would look at the end of the report they would see that this request had been more than complied with, as it not only showed the amount of coal raised month by month, but also the amount realised for it; but to arrive at the actual cash results they must take 2½ per cent. for customers who had paid cash. He wished he could state that there was reason to hope the bad times had passed away, and that there was an immediate prospect of improvement; but he could not do that, and the only comfort he could see was that this company had hitherto done as well, and perhaps better, than their neighbours in the Forest, and better than others in other parts of the country; and he thought, having regard to the state of trade and other things, that the company could not be considered to have done badly. Many of the shareholders would, probably, consider that a strong statement, seeing that the balance-sheet, after paying expenses, showed a loss; but, in his humble opinion, and with some acquaintance with the coal trade, especially in the Forest, and bearing in mind that this was the third mild winter they had had, he thought they had no reason to be depressed or out of heart with respect to the property. If there was a return to the normal state of the coal trade, which would yield the company from 2s. to 3s. per ton more than in the past year, the company would be not in a bad position, but in a prosperous condition. There was a matter in connection with the special business which would prevent him from moving the adoption of the report as usual, but if he could give any further information to the shareholders he would be most happy to do so.

Mr. K. PARNALL (a director) said he thought the directors had done everything possible to insure the success of the company. During the past year they had raised about an average quantity of coal, but, taking the years 1876 and 1877, there was a difference in the produce of those years of 12,000. If the shareholders would refer to the present accounts, and also the accounts for the previous year, they would see that in the previous year there was a profit of 5000., and in the last year a loss incurred of 2500., making a difference of 7500., and against that they had a difference in the produce of the coal of 12,000., showing that 4500. had been saved in the working of the coal during the past year. That was all they could expect the managers to do, and was an evidence that they had done the best in their power. He believed the management had done the best that could be arranged under the circumstances. It was a great disappointment to the directors that they were not in a position to pay a dividend. The vendors guaranteed 10 per cent. upon the company for five years, and looking at all the circumstances, it was really astonishing that the vendors should have taken upon themselves such a responsibility, as the carrying out of this responsibility in its integrity would have involved a cost to those gentlemen of 40,000. If there had been a failure of the guarantee under such circumstances they could hardly censure those gentlemen, for they could hardly calculate that those gentlemen would have been called upon for that large sum. Nor could he see how they could well censure the Syndicate who recommended the company with a guarantee of 10 per cent. for five years. Then whom should they censure in the matter? Well, he thought it was those people who accepted, at the moment of the extraordinary state of the coal trade, of the guarantee—the censure must be upon those who accepted at that moment, and invested their money in the company. (See note on the question was asked whether the estate of Mr. Alfred Gould was sufficient to carry out the guarantee; there was reason to believe that there was at the time, but the miserable state of trade during the past year had altered the position of that estate altogether, and instead of the estate being worth, as it would have been under favourable circumstances, 30,000. to the good, it was now nowhere. It now became necessary to make some arrangement. The directors were anxious to have the assistance of the shareholders in the matter, and on the previous day a meeting was held of many shareholders holding 50 shares and over, at which the matter was fully discussed. In conclusion, he moved the adoption of the report and accounts.—Mr. J. R. BENNETT seconded the resolution.

Mr. R. EVANS asked whether the 18000. interest upon debentures had been paid on an average of three years.

A SHAREHOLDER, who said he held 50 shares, remarked that he did not receive an invitation to attend the conference of the shareholders on the previous day. The SECRETARY said that the shareholders present were those who held 50 shares in London, and more than 50 shares in the country.—The SHAREHOLDER said he lived in the country.

Mr. C. T. WILSON said the directors had nothing whatever to do with the selection of the gentlemen who attended the meeting on the previous day; the selection was made by the solicitor and the secretary.

In compliance with a request from the meeting, the SECRETARY read the names of the gentlemen who had been invited to attend the preliminary meeting, and said that nine of the gentlemen so invited attended.

Mr. McLEAN said he attended the meeting referred to on the previous day, and he was somewhat surprised that, after what he said on the previous day, a motion should have been made for the adoption of the report and accounts. He objected to the adoption of the accounts on the ground that some of the items therein were incorrect, and drew special attention to two or three of such items.

He moved as an amendment that the accounts be merely received. The CHAIRMAN said he would read the two remarks of Mr. McLEAN. As to the 50000. debentures in the hands of the Gloucester Banking Company, the bank were the holders of them instead of some one else; no doubt the bank had a right to call upon the company to pay those debentures, as any other person would, in 1880. The company had 30,000. of debentures, and no more than 30,000. As regarded the expenses of the committee appointed some time since, they did not amount to more than 50s. or 60s., which he believed had been allowed in making provision for bad debts.

Mr. JENKINS, one of the auditors, said that with respect to the balance of 99800. due on revenue account, it did not state that that was the only sum due from guarantors; to that amount was to be added the guaranteed dividend of 15,000., which had not been received during the past year and a half.

The CHAIRMAN, in reply to a question, said that upon the death of his brother, according to the prospectus, his liability as a guarantor ceased.

Mr. C. HUE said he would second Mr. McLEAN's amendment that the report should only be received.

Mr. RUSSELL EVANS said he looked upon the letter submitted to the shareholders that the guarantee was absolute and complete, and that there were no funds to meet their claims, so that it did not much matter whether the balance sheet was or was not absolutely correct from an accountant's point of view. From his knowledge of the coal trade in South Wales and the Forest of Dean, he thought they had reason to congratulate themselves that there had not been a much larger loss on the operation of the company during the year. He was bound to say that in some of the collieries with which he was connected a very large loss had been made during the past two years. This fact proved that the management of their colliery must be very good to have produced such results under the circumstances. He would suggest that a detailed account of the estate of the late Mr. Alfred Gould should be submitted to the proprietors before any decision should be arrived at.

The CHAIRMAN remarked that the matter would be brought forward at the special meeting. With regard to the accounts submitted, they were simply an account of the working and expenses of the collieries during the year they had been carefully gone through, checked, and vouched by the auditors, and what good could come from calling another meeting simply for the purpose of passing these accounts. No substantial objection had been raised, or he would at once consent to defer the adoption of the report. With respect to his share in the guarantee, if his brother had not died he (the CHAIRMAN) would have been liable jointly for this guaranteed dividend. The simple fact of his brother's death released him (the CHAIRMAN) from the guarantee; but showing the faith which he had in the concern he might state that after the formation of the company he bought 300 shares at par, and in 1878 a further 169 shares at par. He was not at all anxious to get rid of the works, as he could show by communications between Mr. McLEAN and himself. When the first negotiation fell through, he was not at all anxious to surrender the works, but the company had been formed, and he now held a far larger stake in it than he did at the commencement of the company, and he still had great faith in it.

The amendment was then put to the meeting, and carried by 14 to 5, but a poll having been demanded, it was, after a discussion, decided to adopt the report and accounts "without prejudice." This decision was carried with two dissentients.

Mr. RUSSELL EVANS proposed the re-election of Mr. R. Parnall, the retiring director.—Mr. C. T. WILSON seconded the motion, which was carried unanimously.

The auditors, Messrs. Curtis, Jenkins, and Co., were re-appointed.

The meeting then adjourned, special notice for the purpose of considering the question of compromising the action now pending between the company and Mr. Thomas, the executor of the late Mr. Alfred Gould.

Mr. WILSON said a meeting of some of the largest shareholders was held on the previous day on this subject. At that meeting Mr. McLEAN took an active part, and was, he believed, prepared to move a resolution.

Mr. McLEAN said the matter was very fully discussed, and a conclusion was arrived at that they could not come to a proper decision as to the action until they had complete information respecting the estate of Mr. Alfred Gould. He would, therefore, now propose the resolution submitted to that meeting, which was to the effect that the question of compromise should not be considered until the auditors submit the following accounts—a complete account of the liabilities and assets on the death of Mr. A. Gould; a complete statement of the receipts and expenditure, with vouchers, since that time; and a complete statement of the assets and liabilities. It was also suggested that Messrs. McLEAN and Powell should be a committee.—Mr. RICKETTS seconded the motion.

In the course of a long discussion on this motion, Mr. CARTER, on behalf of the executor of the late Mr. Alfred Gould, said the statement he had made as to the estate being insolvent was, he sincerely regretted to say, quite true, and he thought the accounts he had submitted quite proved that fact. However, as further accounts were asked for, he would be very happy to prepare and submit those moved for by Mr. McLEAN.

Some further discussion ensued, in the course of which the CHAIRMAN strongly urged upon the shareholders the desirability of considering how best to settle the outstanding matters, as, if the present depression in trade continues, the money would have to be provided to carry on the collieries during the summer months.

It was ultimately decided to appoint a committee of shareholders to act with the directors in considering and carrying out the proposed compromise, after the accounts asked for are furnished. Six shareholders were nominated, and it was decided that of the six shareholders and three directors forming the committee, five should form a quorum, and that the majority should decide any question.

The proceedings then terminated.

RUBY CONSOLIDATED MINING COMPANY.

An extraordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Tuesday.

Mr. W. A. MALCOLM in the chair.

Mr. J. M. HYDE (the secretary *pro tem.*) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, in moving the resolution of which you have had notice I will not detain you long by the remarks I propose making, but I may, perhaps, go back to this time four years ago when the three present directors—Major-General D'Oyley, Mr. Hyde, and myself—were put in charge of the company's affairs. We have had within that period a series of difficulties almost insurmountable to overcome, and which have involved the company in an immense amount of expense, and which have also proved a great source of detriment to the interests of the shareholders; but there is no cloud so dark—as has been remarked here before—which has not got a silver lining, and I think I may say that we have arrived at the silver lining, the sun is shining, the clouds of misfortune, which we have had, as I said, very great difficulties, and among others which we have had to contend with has been an amount of bitterness which from first to last has been imported into our affairs. To-day I would deprecate any continued expression of that sense of soreness which has hitherto characterised the proceedings of this company, and with regard to my own remarks I shall endeavour carefully to avoid making any allusion that may be disagreeable to anyone, and I hope that those who may follow me will observe the same course. (Hear, hear.) We have, as you know, entered upon a series of actions. In America we have had to enter into actions against Mr. H. Heynemann, who was at one time the trustee of this company, and who, of course, imagines that he is justified in his course, but we have no objection to what we were justified in the action we took. We have had no satisfaction out of the steps we have taken in America—none whatever; from first to last every action we have entered, every step taken, has proved a failure. I cannot blame the Courts of America, or the laws of America. Having a company whose interests lie in America we must, of course, accept the laws of that country, and cannot quarrel with them; and, as I said, the result of every action has been that they have thrown us out of the Courts of San Francisco and Eureka. We have an appeal now under consideration at Carson City, which is the capital of Nevada, where the Supreme Court sits, and that appeal is still under the consideration of the judges. If the decision is given in our favour, we can take the case to the next court, and we can then commence our action again at Eureka, and the whole of the expenses incurred during the last three years will have been thrown away; we shall simply be in the position in which we were when we began in the Mining Court of Eureka. I think that, gentlemen, a sufficient reason for making every effort to cease all action, and for endeavouring to come to some arrangement with Messrs. Heynemann. (Hear, hear.) The arguments for adopting the agreement which is now under discussion, and which no doubt you have all inspected, are, I think, insuperable. There is nothing that presents itself to my mind to urge against the agreement. We have had, comparatively speaking, a very difficult position to play. I think the whole of the defects in the action are with one exception, either absent from this country or in such a position that it is not worth the company's while to prosecute the actions. We have not the funds which are necessary to support the immense expense of continuing actions both here and in America. Now, as the result of this agreement, all the actions now pending will cease, and the directors trust that individual shareholders who have entered actions against Messrs. Heynemann and others will withdraw them. That is part of the agreement, and we hope we shall meet with no opposition from those shareholders who have entered those individual actions. The decision of the directors in arriving at this agreement at present under your notice appears to have been approved by almost all the shareholders in the company. In support of the views of the directors, I may mention that we have received from no less than 86 shareholders proxies representing in the aggregate 20,832 shares, which is an overwhelming majority of the shares of this company. That, I think, will prove to you that the decision which the directors have come to on this occasion is a wise one, and that everyone interested in the matter agrees with us. I strongly recommend to you the adoption of this agreement. I have very few remarks to make as to the affairs of the company, the directors having met the shareholders so recently, and I will now conclude by moving the formal adoption of the agreement, as follows:—"That the memorandum of agreement, dated the 4th day of February, 1878, and made between Hermann Heynemann, of San Francisco, in the United States of America, merchant, of the first part, and the Ruby Consolidated Mining Company, of the second part, of the third part, be and the same is hereby declared to be approved, assented to, and confirmed by the members of the company, and that the directors of the company be and they are hereby directed to take all such steps and to make, execute, and do all such deeds, documents, and things as may be necessary or proper to give effect on the part of the company to the same agreement and the provisions thereof."

Major-General D'Oyley seconded the resolution, and said he had nothing to add to the CHAIRMAN's explanatory statement of the company's position and proposals.

The CHAIRMAN invited comments from the shareholders present, and expressed his readiness to hear and reply to any remarks shareholders might wish to offer upon the agreement now submitted to their approval.

No one rising to speak, the resolution was put and carried unanimously.

The CHAIRMAN said: Gentlemen, the whole of the business before the meeting is the adoption of this agreement, which I am very pleased to see you seem entirely to concur in, and I am glad to think that the action of the directors has been so generously supported by the shareholders, both by means of proxies and in person.

There is one point, however, not brought officially to your notice, but which has occurred to the minds of those present, and which I think it is right to bring before you. We have not been in receipt of any income, but have conducted the affairs of the company by means of liberal subscriptions from some of our shareholders, who have contributed to what was originally called the "defence fund." Now, gentlemen, this agreement will put us in possession of our property, which we have been fighting for for five years. The question I refer to is the financial position of the company. We must reanimate the *corpus*, which is at the present moment dead. We have to reanimate it, and for that, of course, working capital has to be provided. We directors have carefully considered this question, and it has occurred to us that many of the shareholders (all, I hope) will cheerfully subscribe towards the working capital, and in this way we will be able to apply to the actual improvement of your property. We propose to put the money into it and to bring it out again, let us hope, a hundredfold. (Hear, hear.) I wish to say to those present (and I should also like to have seen many more shareholders here to-day) that I hope you will all give your support when we come to our shareholders for further subscriptions for debentures in the way of working capital. The prospects of the company are, I think, extremely favourable. The locations of the mines are similar to the Richmond and Eureka Consolidated. We, of course, do not know the condition of the mines exactly, because we have not been in a position to get reports from them, but we have every reason to believe from everything we have heard from San Francisco and Eureka that the mines are very rich.

That I think is proved by the fact of the desire of Messrs. Heynemann to retain their interest in the mines. We have argued and discussed the question with them, and they have evinced a very strong disinclination to part with more shares than they have done, though the directors naturally wished them to give them all up. Therefore, I think we may fairly assume that the mines are quite as valuable as when the company first made a bid for them. The Richmond and Eureka Consolidated are in a highly prosperous position. The former paid 30 per cent. last year, and its N. S. shares are quoted at 80. 10s. 10s., while the Eureka shares are quoted at proportionately high prices in San Francisco, and there is no reason to suppose that our prospects are not equally as bright as those of the two companies I have mentioned. (Hear, hear.) We wish to obtain this capital, and we might do so from outside sources, but when we appeal to capitalists they ask us very naturally "What are your shareholders going to do? If your shareholders have any belief in the security of the property we will assist you, but not otherwise." Hence, until the shareholders do do something to assist us towards proving their belief in the security we offer we cannot get the outside public to do anything. I, therefore, intend to ask the shareholders—first those who are now present—to signify before they leave the room what they are prepared to do, and then we shall appeal by means of a circular to absent shareholders; in fact, these will be sent to all the shareholders, but I hope that gentlemen present will before leaving the room give us their support. I see our way clear to raising a capital of a working capital, and one way is by the sale of a certain portion of the company's property. We have a quarter-share of the Conolly Mine, belonging to the British Mining Company, from whom we have received offers for the purchase of that share, and as we are not working the mine ourselves, and are unable to exercise any control over the property, and as we may be called upon to

subscribe money towards its expenses, which is not at all desirable, it is obviously to our interests to sell it if an advantageous opportunity offers. That will produce to us about 20000., which will form the nucleus of a working capital. The matter, as I said at the outset, is not before you officially, but it will be brought before you if we decide upon selling that share. Now, gentlemen, I hope that all of you will sign this paper, which says that you agree to apply for debentures to the amount put opposite your name, payment to be made when called for by the directors, such debentures to be in the form and on the terms of the specimen. (The specimen is the old form of four years ago.) And you agree to accept the debentures as issued either by the Ruby Company or the new re-constructed company, which will take over the assets of the old company. The proceeds to be used exclusively to reimburse the debentures formerly issued by the Ruby Company, and to form a working capital.

A SHAREHOLDER: What sum of money are you likely to require, and how will the money be applied?—The CHAIRMAN: I believe it is almost impossible for the directors to give answer as to the amount of money required for the purposes. They have an idea that about 10,000, or 12,000, will be needed. Then as to the application of the money, I may assure you it will be used solely for the purposes of working capital. (Hear, hear.)

A SHAREHOLDER: And redeeming the old debentures?—The CHAIRMAN: We hope to get the present debenture-holders to take the new issue in lieu of the old. I, for one, shall do so. (Hear, hear.) Of course you understand, gentlemen, that another meeting will have to be held (it will be convened for the 23rd of this month) for the purpose of confirming the agreement now arrived at. Now, gentlemen, there is only one other matter which I would like to bring before you, and that is somewhat personal. The three directors—Major-General D'Oyley, Mr. J. M. Hyde, and myself—have devoted our time and attention incessantly to the interests of this company during the last four years, and no funds have been available for our remuneration. Mr. Hyde, in addition to the office of director, has acted as secretary for two and a half years, and has devoted very great time and attention to the affairs of this company, both here and in America. The time has now come when we shall have some funds in hand for the discharge of our liabilities, which are somewhat onerous, and at the same time we shall have a small balance available. The directors do not wish to do anything in the way of taking remuneration without the knowledge of the shareholders and their consent. I have, therefore, now to say that out of the funds available by the terms of this agreement the three directors whom I have named propose to reimburse themselves to the extent of 1000. apiece on account of directors' fees. I hope, gentlemen, I have by this statement made quite clear to you what is the intention of the directors, and I trust that if there is any objection to that course you will express it.

A SHAREHOLDER: Should not that be proposed?—Another SHAREHOLDER: I shall be happy to move that the directors be remunerated to the extent mentioned.

The CHAIRMAN: We are very much obliged to you all the same, but it is not necessary there should be a motion on the subject.

A SHAREHOLDER: You have not, I suppose, a draft of the new scheme here?—The CHAIRMAN: It is quite an informal document, to the effect that the new company takes over the assets and liabilities of the old company, and that the old scrip will be exchanged for new.

Capt. GOWIE: Before finally separating, gentlemen, I think we have a duty to perform. I am sure I can bear testimony, and I do so with great pleasure, to the great zeal and indefatigable exertions that the gentlemen who compose the direction of this company have displayed in conducting its affairs in the face of the most adverse and trying circumstances, and I feel confident that all present will join with me in a cordial vote of thanks to the Chairman and directors—(hear, hear), and if you please I will in that include the names of Messrs. Markby, Tarry, and Stewart, the company's solicitors.—The resolution was seconded, and carried unanimously.

Mr. J. M. HYDE said: Gentlemen, on behalf of my brother directors and myself allow me to thank you for the vote of thanks you have so kindly accorded us, and in doing so permit me to say that the Ruby Mining Company is a most exceptional, a most extraordinary, company. You all know that. And I must really thank you myself to say that if we had not with a firm determination stuck at it in the dogmatic way we have done the whole thing would have fallen through years ago; and instead of our appearing before you to-day the representatives of an existing company, and I hope one which is instinct with life and promise, the entire concern would long since have collapsed, and we should never have heard of it again. We have really stuck to it through evil report and through good report, and have at last brought it into the position which the Chairman has just explained to you. The whole affair now really lies in a nutshell. We have concluded an arrangement with the original promoters, and that arrangement has been confirmed by you to-day. It is necessary according to law that that confirmation shall be duplicated at another meeting, of which ten days' notice must be given. After that the whole thing will be completed so far as we are concerned; and, as our Chairman has told you, the property will be then handed over to the custodians appointed by the shareholders to receive it. Gentlemen, I beg again to thank you.—The proceedings then closed.

SAINT PATRICK LEAD MINING COMPANY.

The annual meeting of shareholders was held on Wednesday, at the offices of the company, Coleman-street.

Mr. ALFRED THOMAS in the chair.

Mr. R. CUMMING (the secretary) read the notice convening the meeting, and the minutes of the preceding meeting were confirmed. He then read the reports, as follow:—

March 4.—In bringing to your notice a review of the work accomplished in this mine during the past 12 months, I am gratified to be able to say that in its results I have been able to strengthen and fully satisfied as to the sanguine views entertained with such confidence from the company, and which are now reason to hold out hopes of a speedy and brilliant success, more especially at the cross-cut north in the 120 yards level. This cross-cut has been continued in the cross-course 74 yards during this period, having passed through the ground underneath the large cavern found in the 90 yards level above. It is this cavern which, it may be remembered, I drew particular attention to when discovered as being in all probability in the vicinity of mineral deposits, and my strong conviction that a main lode existed in connection with it; that it, in fact, formed a residue of the compounds, and matter forced through this chamber at the time the lead ore deposits had been carried forward and precipitated into the vein. As a corroborative feature, we found that on coming underneath this cavern the cross-course began to show traces of lead ore, which have generally become stronger, and proceeding northward, and developed into more substantial pillars and solid lead ore throughout the cross-course, which within the last 3 yards driving, with a firm wall underlying north, has been completely disordered, showing unmistakable evidence of a disturbing influence, and such as I should expect to see at the junction of a main vein with this cross-course. In passing underneath the cavern a small joint of spar was cut through, running east and west, and it was deemed advisable to sink on this 11 yards deep, to a bed of shale that was known to pass underneath, having been seen further southward in the cross-cut, and dipping northward, thus proving to satisfy our minds that the character of a main vein should be passed without a thorough search and examination of every feature which presented itself, as it not infrequently happens in this locality that such indications are due to the lode being split up into small branches on passing through a shale bed (a notable instance of which has recently occurred at the Gorsefield Mine, near Holywell). Another sump has been sunk to the same bed further north, at the point where the first lumps of solid ore were taken, and nothing being seen under the shale in either case. I am now abundantly satisfied that our great discovery lies before us, and from such indications as are now known I have the greatest faith of it being near at hand. In the 60 yards cross-cut, in the chert measures, we have completed 84 yards driving since the last year's report, but up to the present time no vein has been intersected. The measures are so congenial that any lode found in them would be productive, and most valuable. From so long a distance being driven without the intersection of any lode, we may fairly anticipate those which are in advance will be richer when cut; that is, I have reason from a long experience of mining in these measures, to suppose that the mineral productiveness of the entire length will be concentrated in one or more very extensive deposits. Very little has been done in this district in this extremely rich formation for many years past, but I am enabled to state from my own knowledge, and from existing records of the adjoining mines—Halkyn to the south, and St. George's Field to the north—that they are perhaps richer, and certainly more productive, than any point of easy working ground, than any in which mining is carried on, and I fully believe a short distance driven further will lay open the field to wealth which we have been so long and anxiously expecting. Other operations have been carried on of minor importance in rising for pipes of ore from the 90 yard cross-cut, &c., and I am induced to think some good runs of ore will by-and-by be found on rising a little higher towards the junction of the black limestone with the chert. In this event great facilities will be offered in working them cheaply, as by the means of the measures rising westward the deposits would be worked upwards as an inclined plane, and good profits realised.—WILLIAM FRANCIS.

March 8.—In compliance with your instructions I have made a thorough examination of Saint Patrick Mine both at the surface and underground, the report of which I beg to hand you. This mine is situated in the parish of Holywell, in the county of Flint, in the heart of one of the richest lead districts in this country—the Halkyn mountain. I find the main bearing rocks of this property are in chert and limestone, both of which in this locality have been exceedingly rich, and the favourable position of this mining property cannot fail to command special attention. On the north it adjoins the St. George's Field vein, and judging from the extensive workings along the course from west to east the returns must have been immense in the chert formation. On the south it adjoins the Halkyn Mine, which also in the chert has proved exceedingly rich in former times; as much as 800 tons of lead per month were raised from it, and it was worked for years. To the west there have been main veins worked profitably and extensively in the limestone formation, and at the eastern boundary the bearing rocks have a thick covering of shale, directly under which the chert veins prove very productive, bordering the coal strata, so that your property may be said to be surrounded on all sides by every indication of future success.

The workings: A capital large productive shaft has been sunk from surface 135 yards deep (and is perfectly adapted for pump work if required) through the chert, black limestone, and into the best lime rock measures, into which a cross-cut has been driven north about 170 yards in a fine well-defined main cross-course of the country. In this drive two of the lodes worked to the west have been passed through, but they appear to be pinched up in both cases into small branches of spar, being in hard ground, though fine specimens of ore have been taken from the south lode in the small exploration that has been made on it. On the north lode a sump has been sunk to a bed of shale, but the vein does not appear to have improved. I, however, consider this to have been a desirable trial before resuming your main cross-cut north. Seeing such a fine unexplored piece of mineral country in so desirable a situation I should at once have obtained a vigorous carrying on of this work in the full belief that a rich main lode would certainly be found, and in such beautiful stratum would yield large bodies of lead ore. On enquiry I find that several lodes have been worked extensively to the west, which take their direction right into your property, and there are no doubt to be any reasonable prospect of the certainty of greatly enriched deposits being found in these measures. Whether they be found in one, two, or more lodes is a matter of little consequence, as it is frequently found the main trunk lodes, which have proved the richest in these eastern measures throughout the district, frequently spread out into a number of second-rate branches or lodes in passing through the cross-courses to the west, and become less productive in that direction.

The next important operation will, from what I have already said, in a measure speak for itself—the 60 yard cross-cut in the chert. These measures are precisely

similar to
Hall
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similar to those found in the two rich adjoining mines—the St. George's Field and Halkyn—and being in untried ground, I look upon your success with entire confidence. This cross cut has already been driven about 180 yards, and although no lode has yet been met with there is every probability that you are not far from the desired object, and that the lode when it will prove a master one and more productive, as would appear to be the case in similar instances where such a length of the chert measures have been found without veins, and then a number of parallel veins have been found close together, all containing very rich deposits of ore. The next point of interest I examined was a cross-cut driven at the 90 yard level northwards about 150 yards, and southwards to join the boundary about 30 yards. This has been driven in the fossil limestone under the chert, which produces good flats and runs of ore, sometimes very rich, but of a minor importance, as the deposits are seldom continuous or lasting, although in some instances they have proved exceedingly rich and remunerative, as was especially the case in the Prince Patrick Mine and the South Prince Patrick Mine within a recent period, and adjoining your mine to the westward. I may mention that I was much struck with the large cavern 30 yards long found in this cross-cut 90 yards north of the shaft. I look upon such indications generally as being in the vicinity of good courses of ore.

I have been rather lengthy in report, because I am convinced of the importance of this apparently valuable mineral property. I now sum up by stating that my opinion is that you have only to proceed vigorously to lead to a permanent and profitable property.—T. H. MINERS.

THE CHAIRMAN: I am sorry it is not in my power to acquaint you of any great discovery of wealth, but I am pleased in being able to inform you that all points of operation in the mine have been carried on with vigour, and that the prospects of an early success are more favourable than at any former time. I make this statement, having recently paid a visit to the property. The reports which you have just heard read—one by your local agent and the other by an independent practical authority—go fully into details, so it is not now necessary for me to do so, although I shall be pleased to answer any questions shareholders may ask. You will see by the accounts before you that the cash capital of the company has become exhausted, and the company is actually in debt to the tune of £3600. You will also see that there remain unissued about 3000 shares, representing 3000l. Now, the question which your directors wish you to consider is whether the whole or part of these shares shall be issued, and upon what terms. Your directors suggest that 2000 only of these shares shall be issued at 15s. each, but only to existing shareholders. The sum thus realised will be sufficient to clear off the liability and also provide the funds for the next twelve months' cost, even supposing that we do not sell ore in the meantime, although we have hopes of being able to do so. As you will see by the latest reports, most favourable indications are daily being met with of the close vicinity to a strong east and west lode. We have been at work now three years, and have driven nearly 600 yards of cross-cut; but I would remind shareholders that the next mine working to the north of us, which has recently turned out such a prize, was working five years before it became successful. Some of the old a prize, was lost a twelve-month ago, and now talk of having lost hope. I can only recommend them, as Lord Beaconsfield recommended certain people to do, to "have a little patience." It now remains with you, gentlemen, to say whether the suggestions of the directors respecting the issue of shares shall be carried out. If you should think proper to do so, and the shareholders come forward and take up a reasonable number of shares, I will myself, at least, take 250 shares. It only remains for me now to move the adoption of the report and accounts.

Capt. BATCHELOR: I shall be happy to second that motion.—The motion was carried unanimously.

The CHAIRMAN: The next business is the election of the auditor, as Mr. Francis Wood offers himself for re-election.

Capt. BATCHELOR moved, and Mr. LYNCH seconded, the re-election of Mr. Wood, which was carried.

A discussion then took place respecting the issue of shares, and questions asked about the mine, which were answered by the CHAIRMAN, after which it was resolved—"That the directors be requested to take such steps to issue to the shareholders 2000 of the shares at present unissued, on such terms—not being less than 15s. per share net to the company—as they may think advisable."

It was also decided that a month from the date of this meeting should be given to shareholders to apply and pay for such shares as they may desire.

The CHAIRMAN reminded the meeting that funds were urgently needed, as at present he had to provide the current cost; therefore, under these circumstances, those shareholders to whom it is convenient will kindly make their application, and pay their money into the bankers of the company as early as possible.

Several SHAREHOLDERS expressed satisfaction with the past working of the mine. The usual complimentary vote of thanks was passed to the CHAIRMAN, who, in reply, expressed a hope of being before many months were passed to be able to call the shareholders together to announce something of a tangible nature.

The proceedings then terminated.

VRON SLATE COMPANY.

A meeting of shareholders was convened to be held at the Cannon-street Hotel on Wednesday, but, although there are about 150 shareholders, the necessary quorum of 15 could not be obtained. The result was that a most irregular course of proceedings, lasting for nearly three hours, was carried on. The object of the meeting was apparently to ascertain whether any arrangement could be come to in order to secure the withdrawal of two petitions in Chancery which have been presented for winding up the company. It appears that for some time past the shareholders, of whom there are about three classes, enjoying as many degrees of priority, have failed to supply funds for carrying on the concern, and to prevent the Crown coming in for non-working, the Chairman (Mr. John Robinson, of Carnarvon) has advanced money to the extent of 2062l. 8s. 11d., taking a mortgage on the property and plant as a security. Another director—Mr. Fred. Aldis—is a creditor for some 300l., which he is afraid to receive from Mr. Robinson lest upon a winding-up order being made he should be called upon to refund it. Mr. Sangster thought it of little consequence whether or not a quorum was present, as he considered the meeting quite illegal. Mr. Aldis said that 15 had never been present at one of their meetings. Mr. Robinson could see no reason whatever for winding up the company, as the property appeared to be now on the eve of becoming profitable. Mr. Tawell regarded Messrs. Miller and Aldis as occupying the double position of solicitors to Mr. Robinson and to the company; he had always advocated the appointment of other solicitors. As to its being undesirable to wind up, he could not understand how it happened if Mr. Robinson considered the quarry should be carried on that his petition to wind up was dated Feb. 19, whilst that of Mr. Aldis was dated Feb. 23. Mr. Robinson explained that when Mr. Aldis's solicitor—Mr. Summerhays—declined to receive from him the debt and costs which Mr. Aldis claimed he at once filed a petition to protect himself.

As to the winding-up petitions, they appear to have resulted from an unintentional misunderstanding between Messrs. Aldis and Robinson. Mr. Aldis complained that Mr. Robinson obtained a preference mortgage over him upon undertaking to pay off his (Mr. Aldis's) debt, which he had not done. Mr. Robinson said—Of course not; he offered him the acceptances he agreed to take, but he would not consent to give joint bills on behalf of himself and the company, payable at his own (Mr. Robinson's) bankers in Carnarvon. Any money arrangement which he made would, as Mr. Aldis well knew, be carried out, and he would ask him (Mr. Aldis) whether the secretary (Mr. Barnard) did not offer that Mr. Aldis should take the mortgage on his own terms if he liked to supply the money, but Mr. Aldis had not even supplied the proportion of money he promised. Mr. Aldis said—Quite right; why not; he had never been asked for his share. Had he been asked, and supplied with accounts, he would have paid as readily as Mr. Robinson had done. Mr. Robinson said he believed so too, for he thought Mr. Aldis personally was all right at the bottom. Up to November, 1877, however, he (Mr. Robinson) had found 1151l., and Mr. Aldis had found nothing. He reminded Mr. Aldis that in July, 1876, when a bill for 100l. was dishonoured, and Mr. Chandler had issued a writ for 68l. for examining the company's accounts, for which Mr. Aldis was liable, it was arranged that Mr. Robinson should pay those amounts on behalf of the company. At that time Mr. Aldis said that if Mr. Robinson paid those debts he would find some of the funds for going on. Mr. Miller said that Mr. Aldis had been offered his debt and costs by him. Mr. Tawell considered the conditions such that the offer could not be accepted. Mr. Robinson could not see why Mr. Aldis could not have written that he would accept his debt if Robinson's petition were withdrawn, as he (Mr. Robinson) was the only creditor. In his mortgage the 300l. for Mr. Aldis is reserved.

Conversation of this kind was constantly repeated until at last it was suggested by Mr. Miller that the only real question before them was whether they should wind up or the petitions should both be withdrawn; and it was suggested by Mr. Aldis's party that Mr. Robinson should consent not to foreclose his mortgage for two years, that new directors should be appointed, and that both petitions should be withdrawn, Mr. Robinson continuing to find money for carrying on the works as heretofore. Mr. Robinson said he should, of course, find money up to the 3000l., as he had promised; he did not intend to remain longer on the board, as he objected to find capital and be abused at the same time, and that he would agree not to foreclose for two years provided only that a condition be inserted that the quarry should be carried on to his satisfaction, as

otherwise they might work it so as to leave it worthless at the time his mortgage might take effect. Both solicitors (Messrs. Miller and Summerhays) said that an agreement of this kind was impracticable, as there was no one but Mr. Robinson to find money, and if he stopped at the 3000l. and more were required the works must stop, and he could at once say that the quarry was not worked to his satisfaction. The secretary was subsequently directed to issue a circular to the shareholders stating that he was glad to inform them "that at the meeting of shareholders held this day it was arranged that all petitions for the winding-up of the company should be withdrawn, Mr. Aldis receive payment of his claim, and the company's operations be proceeded with as usual."

WHEAL CREBOR MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Gracechurch-street, on Thursday, Mr. J. Y. WATSON, F.G.S., in the chair.

Mr. C. B. PARRY (the secretary) read the notice convening the meeting, and the minutes of the preceding one, which were confirmed. The statement of accounts to Feb. 23, including five months' costs, against four months' returns, was also submitted, showing a loss on the five months' working of 767l. 3s. 10d., and a debit balance of 291l. 2s. 9d. The subjoined is the report of the agent:—

March 13.—The lode in the 120 east is 3 ft. wide, worth 6l. per fathom. The lode in No. 1 stope in the back of the 120 is 4 ft. wide, worth 15l. per fathom. The lode in No. 2 stope in the back of the same level is 4 ft. wide, worth 12l. per fm. The lode in the 108 east is small and poor. The lode in the 72 east is 3 ft. wide, composed chiefly of quartz and capel. The lode in the 48 east is 1 ft. wide, and yields some good arsenical muddle, but is at present poor for copper. The new shaft is sunk 11 fathoms below the surface perpendicular. At this point the lode has come in the shaft, and we have just commenced to sink on its course; it is now 2 ft. wide, composed of quartz, capel, arsenical muddle, and spots of yellow copper ore. This shaft has to be sunk about 35 fathoms deeper to reach the 48, or shallowest level we are now driving, and as it will be sunk on the course of the lode, and in unexplored ground, we hope to make good discoveries in sinking; in fact, we have good reason to expect meeting with something good in this direction as the shallow levels in the old Crowndale Mine, about 300 fms. east of this point, were very rich for copper. Since your last general meeting we have completed the casing and dividing of the engine-shaft, which is now in good order. We have also erected a 25 ft. diameter water-wheel on the new shaft, with rollers and pitwork complete, which has incurred an additional cost (including casing, dividing, and ladder-road at the engine-shaft) of 340l. to 350l.—JAMES ANDREWS.

The CHAIRMAN remarked that in mining the year, as they were well aware, consisted of 13 months in the payment of costs, and but 12 months in the receipt of returns, so that upon the present occasion they had five months' costs to charge against four months' returns, but with regard to the loss shown of 767l. 3s. 10d., he had carefully gone through the items and found that this sum included 288l. for repairs and for the new shaft, 113l. 11s. 3d. charged for land and water rent, and 50l. for dues, so that their actual loss upon the workings themselves had been 315l. By their new lease they were compelled to do a certain amount of dead work, and he thought it was a question for them to consider whether the present was not the time to ask the Duke of Bedford for a remission of dues. He found that since 1860 the amount of dues paid to the duke had been 2235l., whilst the shareholders had received nothing. If no remission can be obtained it will be for the shareholders to consider whether it was worth their while to go on with the mine at all. Of course they might have some good discovery before long in the new shaft, which had just intersected the lode, as Crowndale was rich at the shallow levels, but this was only looking at their prospects, and not at their present position.

Mr. JEHU HITCHINS said that both Crowndale and East Crowndale had made profits at shallow levels.

The CHAIRMAN believed that the lords in Cornwall had almost without exception largely reduced their dues. Mr. Basset had reduced his in some instances to 1-32nd, and really in the present state of depression it was but reasonable that shareholders should expect the mine lords to meet them. It was but fair, however, for him to state that no application had yet been made to the duke, and that he could not be expected to reduce his dues unless he was applied to.

The SECRETARY, in reply to a question, said that under the new lease they had to pay 100l. per annum dead rent, which did not as in other mines merge into dues.

The CHAIRMAN remarked that Capt. Andrews had said little as to the future in his report, but in a letter which accompanied it he explained this by remarking that he had said nothing in it as to returns, as the lode so varied. He hoped, however, to get from 130 to 140 tons by the end of the two months.

The report and accounts were then unanimously agreed to, and upon the proposition of Dr. PETT, seconded by Mr. KINNEAR, a call of 2s. per share was made.

Mr. CLIFT said that as to the remission of dues, both Lord Robartes and Mr. Basset had made very large reductions, and he thought that if the matter were fairly laid before the duke they might obtain a similar concession from him.

It was then resolved that owing to the low price of copper, the heavy expenses of sinking the new shaft, and the large losses incurred by the shareholders, the lord be requested to reduce the dues at least temporarily.

The CHAIRMAN undertook to bring the matter before the duke by forwarding the resolution, and remarked that if a remission were obtained, and his impression that they would soon be in ore was borne out, they would have some encouragement to continue. He had been a shareholder for 20 years, and was now certainly looking for some return.—Thanks were then voted to the Chairman, and proceedings separated.

DOLCOATH MINING COMPANY.

A meeting of adventurers was held on Monday at the mine (the Rev. W. W. BUTLIN in the chair). The accounts showed a profit on the three months' working of 1057l. 11s. 2d. The balance brought forward from last account was 312l. 17s., and this sum added to the profit enabled a dividend of 5s. per share to be declared, and 15l. 8s. 2d. to be carried forward to the credit of next account.

Captain JOSIAH THOMAS, the manager, read the agents' report, which said:—

The engine shaft is sunk 9½ fms. under the 338. The lode is worth for the length of the shaft (12 ft.) 100l. per fathom. The winze under the 338, west of engine-shaft, is sunk 5 fms., and is worth for 9 ft. long 70l. per fathom. We are obliged to suspend the sinking of this winze for the present on account of the large quantity of water. The winze under the 338, east of engine-shaft, is sunk 9 feet; the lode is worth for 9 ft. long 60l. per fathom. The 338, east of engine-shaft, is worth 16l. per fathom. The 338, west of engine-shaft, is worth 30l. per fathom. We have commenced to sink old sump shaft under the 338; the lode is worth for 9 ft. long 30l. per fathom. The 326, east of new cast, is worth 30l. per fathom. The 326, west of old sump, is worth 12l. per fathom. The 254, west of old sump, is worth 15l. per fathom. The winze under the 252, a few fathoms before this end, is worth for 9 ft. long 15l. per fathom. The winze under the 264, 3 fms. before this end, is sunk 7 fms., where the lode is worth 10l. per fathom. The man-engine shaft is sunk 3½ fms. under the 264; the lode is worth for 9 ft. long 30l. per fathom. The 264, west of man engine shaft, which we have of late been driving on the north part of the lode, has not been of much value. About 2 fms. before the end we have sunk a winze below to 248 to about the same depth as the 264, and are now driving east of the winze, where the lode is worth 40l. per fathom. We are also driving south in the 264 toward the part, as expected to be in a day. The 338, east of Stray Park, has been held to the workings west of Harriett's shaft. We are now drawing out the water from Stray Park engine-shaft, and in less than a month expect to commence sinking that shaft below the 233—South Lode: The 290, east of cross-cut, is worth 15l. per fathom. We have met some branches in the 278 cross-cut south, but have not yet intersected the lode.

The report and accounts having been adopted, Capt. THOMAS said the adventurers would see that during the last three months they had been obliged to raise a very large quantity of tin in order to keep up the usual dividend of 5s. per share. The average price of tin for the quarter had been lower than in any quarter in the past, and was less by 3l. 10s. per ton than the average price of the previous 12 weeks, so that they had been obliged to raise 30 tons of tin more to enable them to earn the same amount of money. Looking at the matter in one point of view it seemed a pity that they should raise such a large quantity of tin at so small a profit, but on the other hand he believed the adventurers generally would not like to see the old mine go off the Dividend List if it were possible to keep it on. Therefore, they had made a little extra effort in order to enable that to be done, and they had raised 30 tons of tin more than they had ever raised before within a similar period. He very well remembered when it used to be said, especially by persons who had no interest in the mine, and who knew nothing whatever of its capabilities or resources, that Dolcoath could not possibly pay with tin at a less price than 60l. per ton. But it was now paying with tin at an average price of only 38l. 5s., and with this sum they were able to make a profit and pay a dividend. This showed very plainly how great the resources of the mine

were, and it must be very gratifying to the shareholders to see that they were in a position to raise so large a quantity. It could also be plainly seen that if the price only went up a few pounds it would make a great difference in their credits. If tin went up to anything like the average price they should probably raise a little less from their rich ground than they were doing at present, and the tributors would raise more from the lower quality ground, which, while the present low prices prevailed, to a great extent remained idle. The deepest point now reached in the mine was 9½ fms. under the 338, and the lode there was still looking exceedingly well, being worth, even at present prices, fully 100l. per fathom. (Applause.) The western part of the mine, west of Harriett's, was also looking very well, and he had said many times before, he believed they would open up almost as rich a mine in that part as in the others, when it was more fully developed. There was a fine strong lode in the bottom of Stray Park, and although it did not contain a very large quantity of tin it looked promising for productiveness as they sunk deeper, and they had good prospects of success in that direction. The boring machine was in course of being made, and the compressor and steam-engine, he hoped, would be delivered on the mine in about a fortnight from this time. The pipes they had ordered from Glasgow, as they could get them very much cheaper there than in Cornwall, the difference in price being nearly one half. (Hear, hear.) They were having 4-inch cast-iron pipes delivered free on board at Glasgow at 5l. 15s. per ton, and to put them down in the bottom of the mine would not cost more than 125l. That was an exceedingly low price. Long before the next account he hoped to have the boring machine in full course of working, and the principal points at which they would aim in the first instance would be to drive the 314 west under the Harriett's part of the mine, and sink Harriett's shaft. That would open an immense quantity for stopping, and they would also after a while be able to bring the man-engine down to that level. What they wanted now was a better price for tin, and when that came they would all reap the benefit of it. (Applause.) Before the meeting separated Capt. THOMAS mentioned, lest anyone should possibly imagine that the increased quantity of tin returned during the last quarter had been brought about by an infringement upon the tin in stock, that they had raised at least 10 tons of tin from underground more than they had sold, and thus the stock had been added to instead of decreased.—Western Daily Mercury.

THE VAN MINING COMPANY.

Report of the directors for presentation to the shareholders at the general meeting, to be held at the mines, near Llanidloes, on Wednesday:—

The directors submit the accounts for the year ending Dec. 31, 1877, which have been duly vouched and signed by the auditor. They show the sales of lead ore to have been 5470 tons, producing 88,985l. 13s. 4d., an average of 13l. 15s. 0½d. per ton. The sales of blende ores, 2404 tons, realised 8019l. 0s. 9d., an average of 3l. 6s. 8½d. per ton. The receipts for rent amount to 243l. 13s. 9d. These three items together amount to 97,233l. 7s. 10d., of which 1563l. 15s. has been credited to waste haulm account for ores sold on that account, leaving a net receipt of 95,664l. 12s. 10d.

The expenditure for labour, supplies, royalty, rent, rates, income tax, and other charges amounts to 53,453l. 12s. 1d., which, deducted from the receipts, leaves a balance of 42,211l. 0s. 9d., as the net profit on the year's working.

The dividends declared and paid amount to 42,000l., and the balance (171l. 0s. 9d.) is placed to credit of reserve fund.

The directors regret exceedingly to have to record a loss in the early part of the year by the failure of Barry Port Smelting Company, amounting to 3197l. 11s. 6d., which they have placed to debit of reserve fund account. The circumstances attending this failure were altogether of so disgraceful a character as to leave no hope of anything of moment being recovered in the shape of dividend, and the entire amount has been written off.

The reserve fund now stands at 1709l. 7s. 11d. The cost of engine, stamps, &c., for the year has been charged to capital, which account is now closed. The remaining costs attending the year's working, after crediting ores sold, stand at 2054l. 1s. 7d., which, with any further expenditure on that account, will be liquidated by sales in the current year.

It will be seen that the result of the year's working compares unfavourably with 1876, owing to the great fall in the prices of lead ore during the last half of the year, causing a reduction of many thousands of pounds in the receipts; this reduction has made further progress during the current year, and prices are now more than 3l. per ton lower than this time last year. Whether this untoward state of things is due entirely to the stagnant condition of commerce it is impossible to say. The directors can only express their earnest hope that a change may soon take place.

Mr. Wm. Page retires by rotation from the direction, and is eligible for re-election. Mr. H. J. Whaley, the auditor, also retires, and offers to renew his services. [For remainder of Meetings, see to-day's Journal.]

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL (Gold).—The directors have advised dated Jan. 22: Quantity of quartz crushed on both the companies' and tributors' accounts for the four weeks ending Jan. 2 was 4615 tons; total gold obtained, 1922 ozs. 4 dwts. 18 grs.; receipts (including 1809l. obtained from tributors), 4432l. 10s. 7d.; payments (including 458l. paid for firewood and timber), 2581l. 5s.; profit, 1851l. 6s. 7d., added to which was previous balance of 2344l. 10s. 1d., making an available balance of 4095l. 15s. 8d. The amount dividend between the two companies was 2000l., the Port Phillip Company's proportion of which is 1300l. The balance carried forward was 2095l. 10s. 8d.; remittance, 1250l.

—Telegram, dated Melbourne, March 8: Month ending Feb. 27—Gold obtained from company's quartz, 447 ozs.; gold obtained from tributors' quartz, 1233 ozs. Profit, 728l. Remittance, 600l.

SCOTISH AUSTRALIAN.—The directors have advised from Sydney, dated Jan. 21, with reports from the Lambton Colliery to Jan. 16. The sales of coal for the month of December amounted to 15,965 tons. The total vend of the half-year ending Dec. 31 amounted to 83,707 tons.

ENGLISH AUSTRALIAN.—Capt. Baisbeck, Jan. 23: We have sunk the engine-shaft 8 ft.; present depth 415 ft.; we have also secured it for 30 ft. with timber. It is now well timbered for 410 ft. to the top of the chamber, where we shall open out for cross-cut; this work has taken more than the usual time to do on account of the hardness of ground passed through. When strong country is met with we are obliged to carry the shaft much larger than the regular size, consequently, when timbering up, the open space has to be carefully filled in again.—Prospecting Shaft: The contractors have sunk 10 ft. 6 in.; present depth 210 ft. 6 in. They have driven west 10 ft. for chamber, also secured shaft with timber for 40 ft. At 205 ft. they passed through a strong quartz leader of permanent character. I saw gold, also, in the middle of the shaft, the indication we have for gold being given. I think this is the same leader we rose up to in the 330 ft. cross cut engine-shaft, but did not prove it as the mine was stopped. Our neighbours, the Ferrons Company, continue doing well. Their No. 1 tribute had 140 ozs. for the fortnight, but they cannot extend their workings further towards our boundary for want of air. They are now sinking an air-shaft from the surface, 50 ft. from our south boundary.

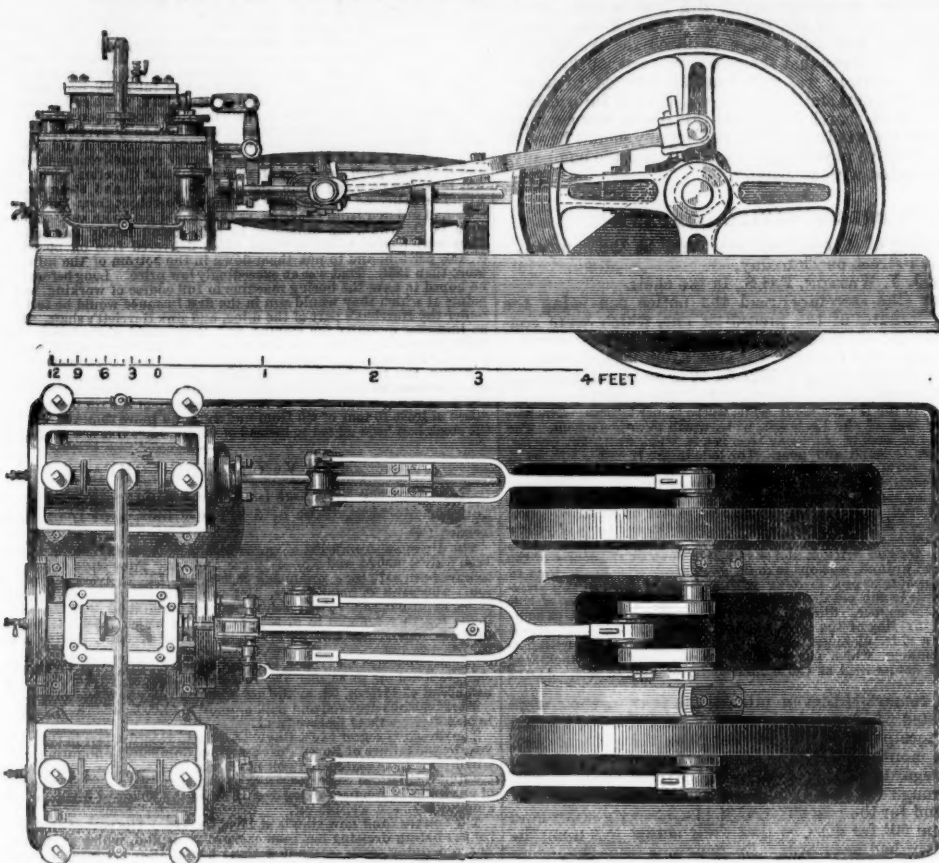
YORKE PENINSULA.—The directors have advised from the committee of inspection at Adelaide, with report from the Kurilla Mine to Jan. 21: The following are extracts from Capt. Anthony's report:—Hall's Shaft: This shaft is now 2½ fms. below the 45, and the ground is gradually getting softer. At the 45 west the lode is completely displaced by a slide. I am yet unable to say whether it is here north or south, but I am now driving north in the hope of finding it here in a direction opposite to the extreme south bend. Four men continue to follow the bunch in the bottom of the 35, east of Hall's shaft; it has departed from the main lode, and is shifting northwards on a floor, but holding good both as to yield and quality. I intend shortly to put in a cross cut to try to intersect it in the north side of the 45 fathom level. Four men are stopping the ore in the 45, west of the hauling shaft, at 4s. in 12. The men will begin to work at the east of the shaft at the beginning of February. I may say that this block of ground has yielded about 200 tons of 18½ per cent. ore, or (allowing for an arch left standing to support the shaft) 15 tons per fathom. It will be seen by reference to my report that the actual yield of ore has supported the estimated value of the value of the lode in the 45 fathom level. It will not be out of place on my part to say here that there is a continuance of this lode standing unbroken in the bottom of the 45, with slight interruptions of comparatively poor ground for 18 fms. in length. I call attention to this fact now because the actual yield of ore in the back of the 45 has confirmed the estimated value of this shoot of ore. . . Morphett's Lode: The 30, east and west of the engine-shaft, will yield about 3 tons of 17 per cent. ore per fathom respectively. The 20 east, which for some time has been more or less disordered and irregular in its yield, has just come upon the ore first discovered in October, 1874, in No. 1 shaft, which the westerly dip has thrown several fathoms further west at the present depth. The end is now with 3 tons of 30 per cent. ore per fathom. Two winzes are still being sunk from the 20 to the 30, east and west of the engine-shaft, each going down into tribute ground, and one from the 10 to the 20, east of the shaft, which is poor.—Ore Returns: In future I will report the stock on hand at the end of each calendar month, instead of, as heretofore, up to the date of my monthly report. On Dec. 31, 1877, there were on hand 200 tons, averaging 17 per cent., worth (say) 17000l. net; 600 tons of dredge ore of 5 per cent., worth (say) 10000l. net; together 27000l. net. Of the ore on hand, 100 tons of 20 per cent. are now ready for bagging and shipment. The machinery and pitwork throughout the mine are working satisfactorily.

RAYNSOLIFF.—The allotment letters were issued on Thursday, and telegraphic instructions have been sent to the company's representative in New Zealand, Mr. Charles Henry Turner, who is resident on the spot, and has everything in readiness to commence operations on the company's gold properties immediately.

THE RICHMOND MINING COMPANY—CAVE DISCOVERED.—A cave was recently broken into at the Richmond Mine, one of the largest ever found on the lode. Although not quite so high as the one discovered on the Consolidated, it exceeds that both in length and breadth, and its beauty is unparalleled. When first found it was a veritable palace of Alladin, its sides and roof studded with prismatic crystals of molybdate of lead, which flashed and sparkled in the rays of light with a brilliancy beyond description. The floor was covered with a mineral vegetation, snowy white formations of the carbonate of lime, delicate and perishable to the touch, but of wondrous beauty and form. The cave is rather difficult of access, but the sight revealed when once within its portals more than repays the visitor for any fatigue incidental to the trip. It is some 150 ft. in length, 50 ft. in width, and of a height varying from 10 to 20 ft., and branches of it lead off to as yet unexplored depth.—The Richmond Company is building a couple of sweating furnaces in the cupel department of the refinery, for the purpose of purifying the dross from the calcining pans before it is put through the smelting furnace. It will remove the oxidised surface, and render it more tractable to the effect of the blast. We believe that the new furnaces are constructed on the same principle as the reverberatory in the roasting process. It is a busy scene in the neighbourhood of the reduction works, and the operations now being carried on at the refinery and furnaces are of a greater magnitude than ever before in the history of the company.—Buckley's Sentinel, Feb. 17.

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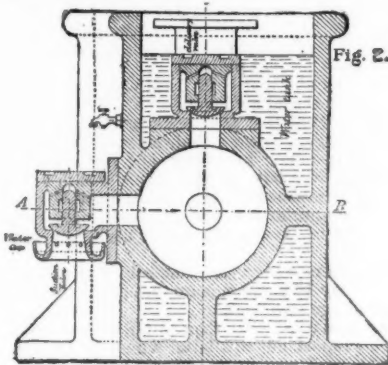
IMPROVED AIR-COMPRESSING MACHINERY.



IMPROVED AIR-COMPRESSING MACHINERY.

It has frequently been remarked that the great obstacle to the general introduction of rock-drilling machinery in connection with ordinary mining operations is the relatively large cost of the compressed air when only a limited quantity of drill power is required. This difficulty has been to a very large extent removed by the improved machinery constructed by Mr. J. G. CRANSTON, of Newcastle-on-Tyne, and of which the above is an illustration. The compressor has one steam cylinder with one double-acting air cylinder on each side of the steam cylinder; the three are all coupled direct to the fly-wheel shaft, so that no gearing of any kind is employed. The advantage of this arrangement is that the working strains are easily divided on each side of the steam-engine centre crank, which arrangement much reduces the wear and tear, and should an increased air pressure be required double the pressure can be obtained with one cylinder, by simply lifting the suction valves of the other air cylinder out of gear; while the steam cylinder crank being set almost at right angles to the cranks of the air cylinders the most effective power of the steam cylinder is obtained at the point of the greatest compression in the air cylinders. Each air cylinder has four gun-metal suction and delivery valves bolted closely thereon, the casing of the suction valves and the valves themselves being overhanging, and fixed to the side of the cylinder. They are provided with water cups close to the inlet, so that a head of water constantly surrounds the valves, keeping them cool, and providing at the same time a certain quantity of water to the air cylinder, which acts as a lubricant and packer between the piston and valve spaces as it is alternately drawn in by the action of the piston, so that almost the whole of the compressed air is delivered into the air receiver at each stroke of the piston. The delivery valves are

bolted on to the cylinder top at right angles to the suction valves, and are completely immersed in water, so that they are not affected by any heat evolved by the compression of the air; but the precise arrangement and form of the valves will be readily understood from the subjoined section:—



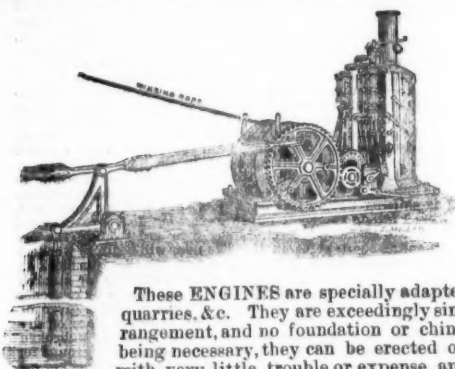
These compressors have now been in use for some years principally for driving of Mr. Cranston's rock-drills and coal-cutters, and have in all cases given great satisfaction; they are at present in everyday use at the Roanhead Iron Mines, the Barrow Hematite

Iron Mines, the Rodderupfell Lead Mines, the London Lead Company's Mines, and many other places. Their working at the Eberhardt and Aurora Company's Mines has already been noticed. It was stated that from the previous annual meeting to Dec. 22 was but just over eleven months, and the difference between 523 ft. and 2363 ft. is 1840 ft., giving very nearly 170 ft., or (say) 28 fms. per month, taking good and bad together; but this average was evidently lowered by some of the early work before the men became accustomed to the machinery, for on Jan. 12 Capt. Drake wrote that "the work in the tunnel is progressing rapidly. The tunnel is now in 2400 ft., and being pushed forward at the rate of 200 linear feet per month." One of the peculiar features of this drill is that the drill tool can be rotated substantially and readily at will by hand, so as to suit the uneven nature or hardness of the rock being drilled, and does not rely on any definite pitch or stroke of the piston-rod in order to secure the desired rotary motion. Altogether the working of the drill is excellent, for later particulars from Eberhardt and Aurora, where the tunnel is now in over 2800 linear feet, state that "no drill machinery can possibly be found to work with greater rapidity and less cost than what we are now using; they give most perfect satisfaction to Capt. Drake." Referring to the machinery, the secretary of the Eberhardt and Aurora writes:—"With respect to our property the last machinery supplied far supersedes the first lot purchased, for the simple reason that they are heavier and better adapted for drilling into hard rock like ours. We have been enabled to let a contract for 500 ft. at about 4l. 18s. per linear foot; as compared with the first machines we save 1l. 2s. per foot, and we drive on an average about 50 linear feet per week against 36." Equally satisfactory testimonials have been received from other users, that of Mr. Smith, of the West Moor Limestone Quarries, near Ferryhill, showing the general character. He writes (Jan. 25) that—"It will now be over three years since I put your excellent drills to work in my limestone quarries. They continue to do their work splendidly. The average work drilled with one machine each week is about 480 ft. This work we do regularly, at one-fifth the cost I previously paid for hand labour. Your friends can see the drills at work at any time." More complete evidence of the efficiency of machinery could scarcely be required.

KINDLER FOR ELECTRIC LIGHTS.—An important invention connected with the system of electric illumination introduced by Mr. JABLOCHOFF, has been patented by Mr. LOUIS DENAYROUZE, of Paris, the object being the automatic kindling of the electric candles as those which are in use burn down. On a frame or stand of any convenient form Mr. Denayrouze mounts two or more electric candles of the kind referred to, and he provides an electric key for making and breaking contact with the electric circuit for each such candle. The said key is worked by one arm of a lever, the other arm of which has a stud pressed by a spring against the candle which is burning near its lower end. When this candle has burned nearly down so that the stud of the lever is no longer supported by solid matter of the candle, then the lever and key are moved by the spring, and contact is thus broken with the circuit for the nearly consumed candle, and is made with the circuit for a fresh candle, which is thereby kindled, and thus successively as candle after candle becomes consumed fresh candles are kindled automatically to take their place.

SEPARATING METALS.—The extracting or separating metals, especially precious metals—gold, silver, and platinum—found native in minerals, and in different scorias and slags produced in various processes of manufacture, Messrs. KAGENBUSCH and KERR, of Newcastle-on-Tyne, well roast the mineral or scorias with one quarter of its weight of coal, throw it red-hot into cold water twice, then use the ordinary fluxes, according to the mineral or scorias from which the precious metals are to be extracted, with 1 oz. of sulphate of copper and 1 oz. of sulphate of zinc to 1 lb. weight of mineral or scorias, in order to create electricity, with an additional flux of (say) carbonate of soda, to get the mass in a fluid state. Metal will then be produced in either crucibles or furnaces which contains the precious metals, gold, silver, and platinum, and which can be refined in the ordinary way.

HOLLOWAY'S OINTMENT AND PILLS—A CURE FOR ABSCESSSES, PILES, FISTULA, AND SORES.—The many satisfactory cures resulting from the use of this invaluable ointment in cases where patients have been suffering from these complaints have induced many medical practitioners to introduce them into the hospitals and their private practice; and in many instances where the sufferer was considered incurable, Holloway's ointment, in conjunction with his pills, healed the most desperate wounds. These medicaments are unequalled for the cure of scrofula and diseases of the skin. In all cutaneous affections incidental to children, from the simple red gum to the complicated scrofulic disease, Holloway's ointment exercises a remarkably beneficial influence, cooling inflammation, relieving irritation, and giving ease to the impatient little sufferer.



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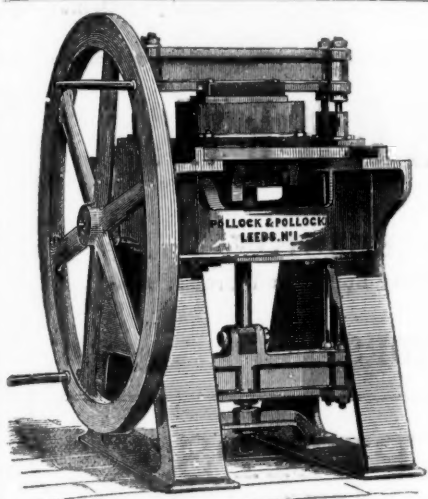
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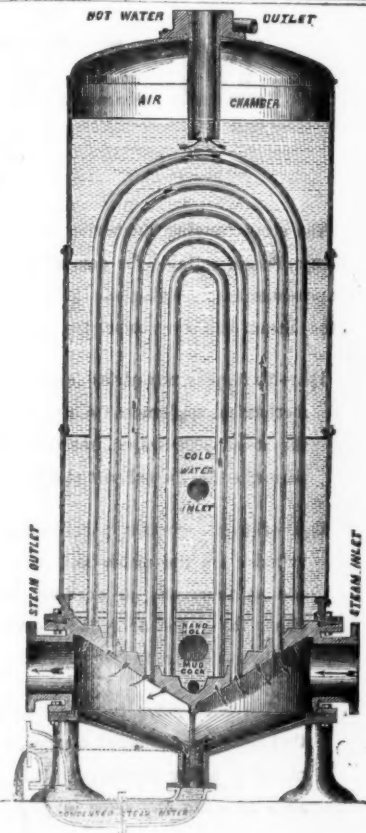
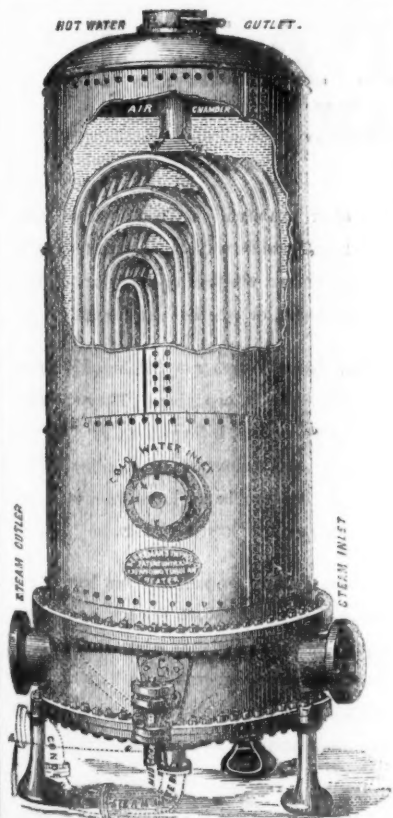
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Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

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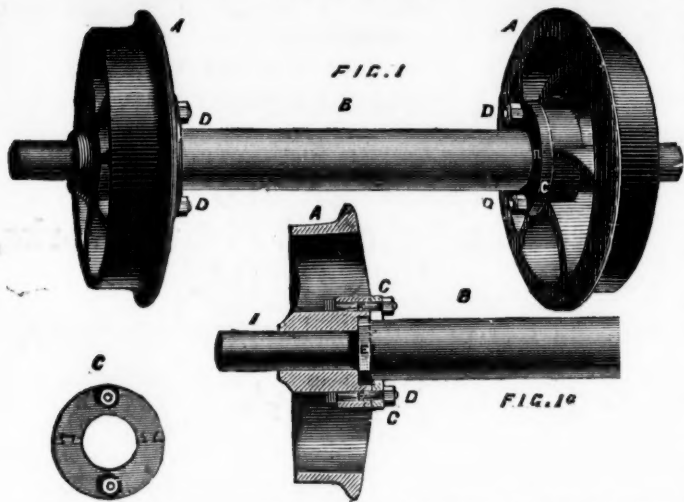
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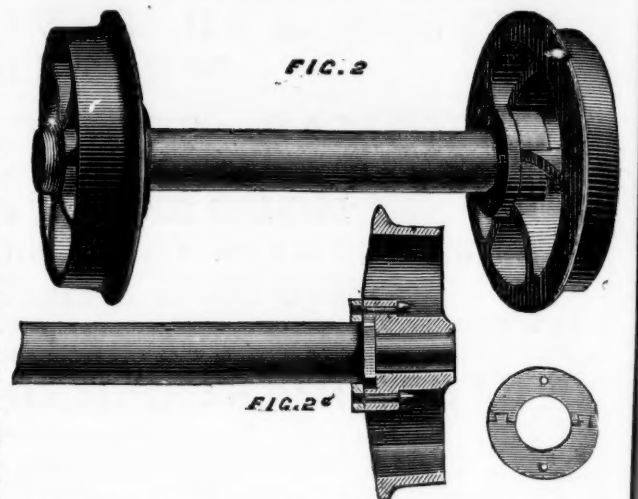


Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings. A A, are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of corf wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The

important desiderata secured by this invention of simplicity (so often wanted in patents), solidity, durability, and economy, have not only been amply illustrated by the technical journals interested in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



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MAY AND MOUNTAIN,

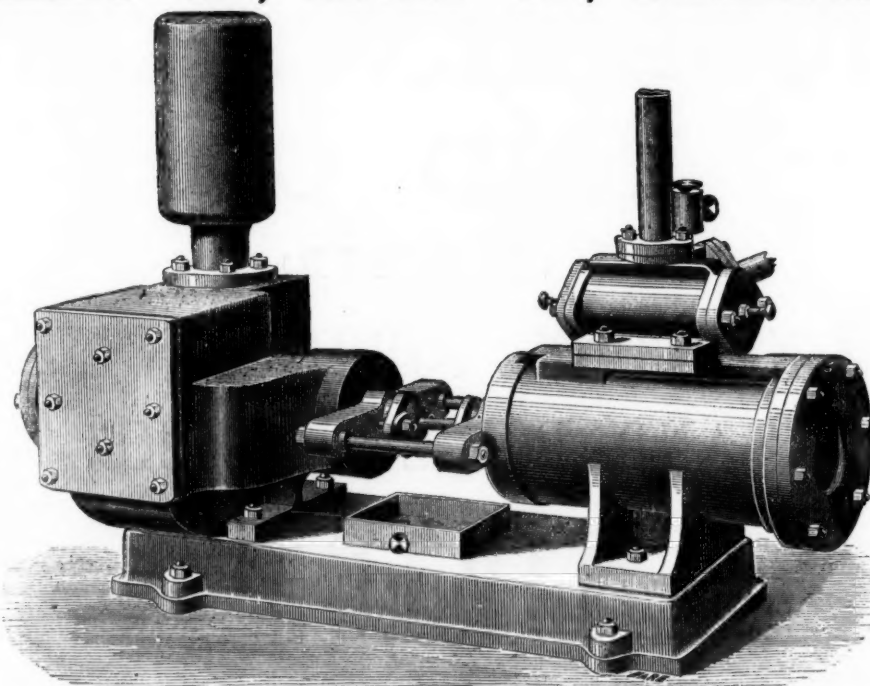
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price.....	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52	£60

Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12	...
Length of Stroke.....	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price.....	£45	£50	£56	£65	£50	£35	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135	...

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ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

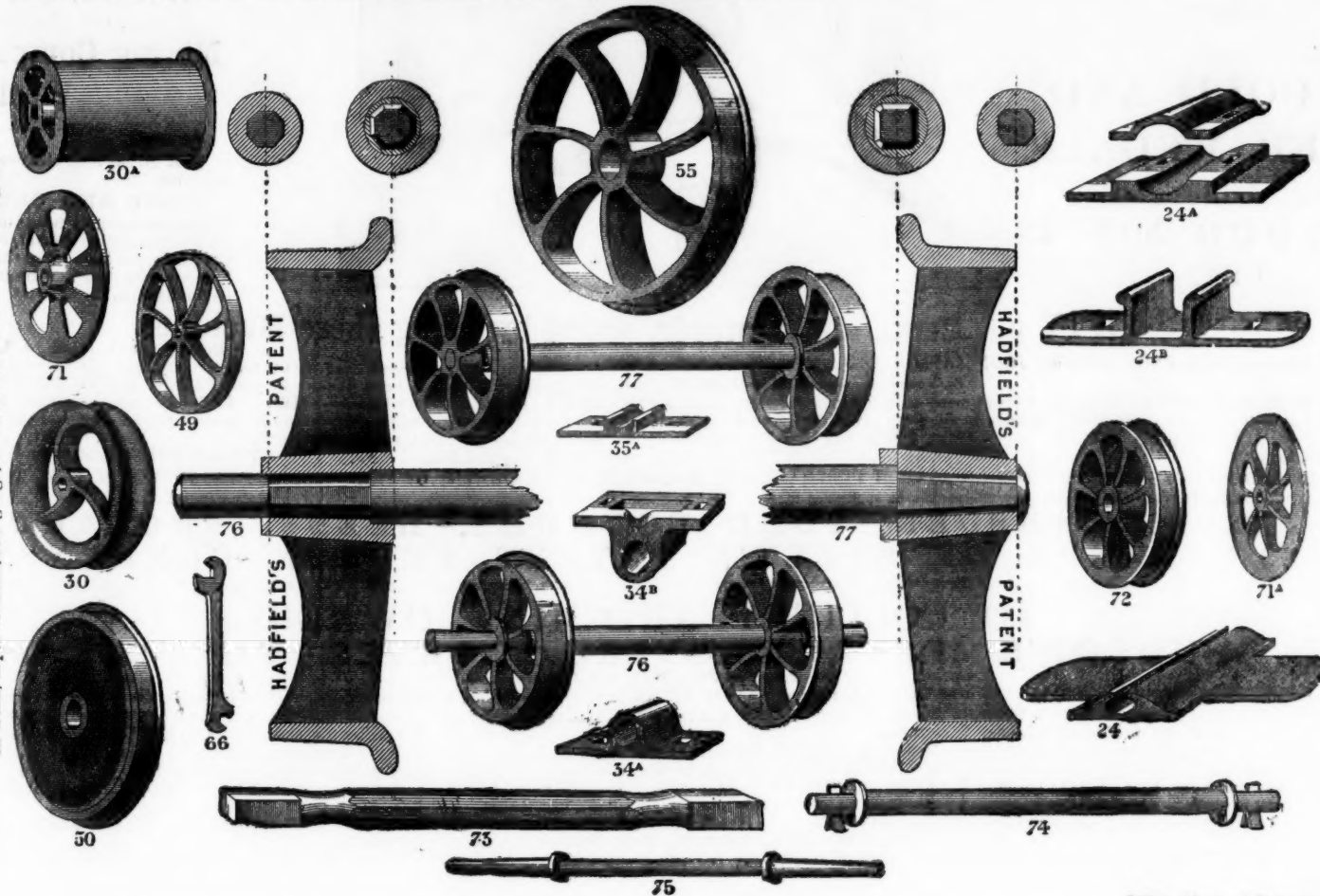
CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



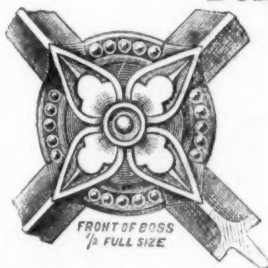
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HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true. We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material. CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely. We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

DOMES AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.

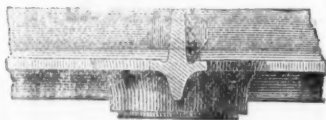


GREAT BRITAIN,
UNITED STATES OF AMERICA,

PATENTED IN

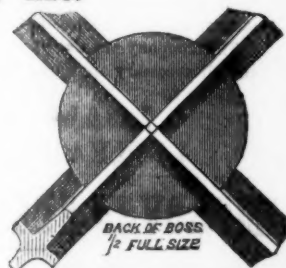
FRANCE,
GERMANY, AND BELGIUM.

ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD

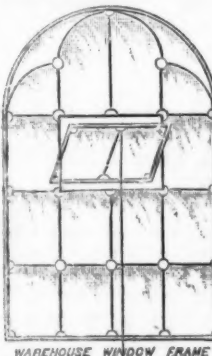


—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

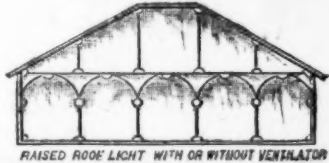
ARE BEING EXTENSIVELY USED IN—



Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

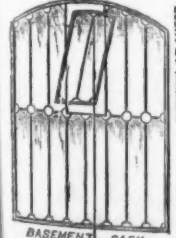
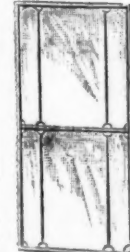


Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.



ILLUSTRATED CATALOGUES
ON APPLICATION.

ILLUSTRATED CATALOGUES
ON APPLICATION.



In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

HOME AND

SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

EXPORT.

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.
90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE CRUSHERS AND STONE BREAKERS,

WITH THE

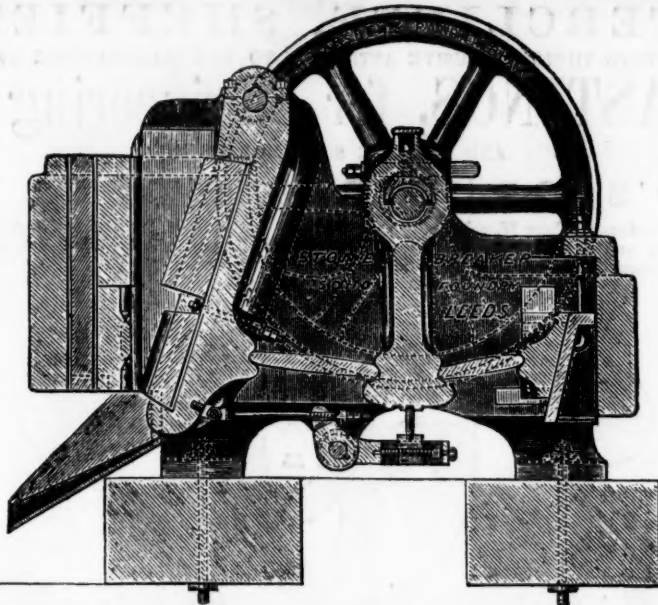
**New Patent Reversible
CRUSHING OR CUBING
JAWS,**

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING

**Four times longer than any
other.**

**60 GOLD AND
SILVER MEDALS.**

**OVER 2000 NOW IN
USE.**



**For Crushing to any degree
of Fineness, or Breaking
to a required size.**

**Her Majesty's Government
USE THESE MACHINES**

**EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.**

H. R. M. has long observed the want of cheaper machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances for the production thereof, been enabled to reduce the prices, yet keep up at the same time the well-known strength of construction. Reduced prices on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

6, Queen-street-place, May 10, 1877.
DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our management, and are pleased to be able to state that they have in all cases given the greatest satisfaction. We are, yours faithfully,
JOHN TAYLOR AND SONS.

H. R. Marsden, Esq.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.
ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

**H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.**

DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL, for the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure yours are the only Machines which fully perform the work you set them out to do, and there are none in the Show can at all compare with them.
Yours, truly,
WILLIAM PRICE, Contractor, Gold Cliff, Monmouth.

H. R. Marsden, Esq.

Royal Agricultural Show, Liverpool, July, 1877.

TO COLLIERY AND MINE OWNERS.

R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—
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KINGWOOD COAL AND IRON CO., near Bristol.
MIDDLETON COLLIERY CO., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, Sons, and Co., Frome, Somersetshire.
T. VAUGHAN and Co.'s TRUSTEES, South Medomsley Colliery; and others.

R. HUDSON, Engineer and Ironfounder, Gildersome Street Foundry, near Leeds (Five minutes walk from Gildersome Station, G.N.R.)

The Barrow Rock Drill COMPANY

Are NOW PREPARED to SUPPLY their DRILLS, the ONLY ONES that have been SUCCESSFULLY WORKED in the MINES of CORNWALL. At DOLCOATH MINE, in the HARDEST known ROCK, a SINGLE MACHINE has, since its introduction in July, 1876, driven MORE THAN THREE TIMES the SPEED of HAND LABOUR, and at TWENTY PER CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together, and at a proportionately increased speed. They are strong, light, and simple, easily worked, and adapted for ends and stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS, and all necessary appliances for working the said Drills.

Apply to—

**LOAM AND SON,
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IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,
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MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES FOR COLLIERIES,

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SOLE MANUFACTURERS of the HOMOGENEOUS WIRE for the ATLANTIC CABLES of 1865 and 1866.

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THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
SOUTH WALES GAZETTE
(WEEKLY), established 1867,
the largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

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The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
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STANDS UNRIVALED

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Blocks of Granite, &c.**



The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—so as to combine strength with light weight.

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Of the simplest and best construction.

Combined Water-pressure Engines and Air-compressors,
Giving most excellent results.

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It has been most successfully worked in the well-known Hematite Mines of Lancashire and Cumberland. Will drive 50 to 60 ft. in hard rock without change of drill, and can be worked by any miner, and kept in repair by any blacksmith. It is the most simple rock drill ever invented, and cannot with fair usage get out of order.

Plans, Estimates, including Compressors, and all other Mining Machinery, supplied on application to the sole makers,—

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Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions,
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